THE INTERNATIONAL MEDICAL CONGRESS.

OPENING ADDRESS BY THE PRESIDENT,

SIR JAMES PAGET, BART.

IT is not necessary to defend the meeting of an International Congress. Such meetings have become one of the general customs of our time, and have thus given evidence that they are generally approved. Let me rather suggest to you some thoughts as to the work which, being in Congress, we have to do, and the spirit in which it may best be done, so that the good effects of our meeting may last long after our parting.

In the largest view of our design, it may seem to be that of bringing together a multitude of various minds for the promotion and diffusion of knowledge in the whole science and art of medicine, in their widest range, in all their narrowest divisions, in all their manifold utilities. And this design, I cannot doubt, will be fulfilled; for although the programme tells of selected subjects for discussion, and defines the order of our work, yet knowledge will be promoted in a much wider range in the meetings without order, which will be held every day and everywhere—meetings of men with all kinds of mental power and all forms of knowledge and of skill; everyone ready alike to impart and to acquire knowledge.

It is safe to say that in the casual conversations of this coming week there will be a larger interchange and diffusion of information than in any equal time and space in the whole past history of medicine. And with this interchange will be a larger increase, for in the mart of knowledge he that receives gains, and he that gives retains, and none suffer loss.

The increase will be the greater because of the great variety of minds which will meet. As I look round this hall, my admiration is moved not only by the number and total power of the minds which are here, but by their diversity—a diversity in which I believe they fairly represent the whole of those who are engaged in the cultivation of our science. For here are minds representing the distinctive characters of all the most gifted and most educated nations—characters still distinctly national, in spite of the constantly increasing intercourse of the nations. And from many of these nations we have both elder and younger men; thoughtful men and practical; men of fact and men of imagination; some confident, some sceptic; various also in education, in purpose and mode of study, in disposition and in power. And scarcely less various are the places and all the circumstances in which those who are here have collected and have been using their knowledge. For I think that our calling is pre-eminent in its range of opportunities for scientific study. It is not only that the pure science of human life may match with the largest of the natural sciences in the complexity of its subject-matter; not only that the living human body is, in both its material and its in-dwelling forces, the most complex thing yet known; but that in our practical duties this most complex thing is presented to us in an almost infinite multiformity. For in practice we are occupied, not with a type and pattern of the human nature, but with all its varieties in all classes of men, of every age and every occupation, in all climates and all social states; we have to study men singly and in multitudes, in poverty and in wealth, in wise and unwise living, in healthy and all the varieties of disease; and we have to learn, or at least to try to learn, the results of all these conditions of life while, in successive generations and in the mingling of families, they are heaped together, confused, and always changing. In every one of all these conditions man, in mind and body, must be studied by us; and every one of them offers some different problems for inquiry and solution. Wherever our duty or our scientific curiosity, or, in happy combination, both, may lead us, there are the materials and there the opportunities for separate original research.

Now, from these various opportunities of study men are here in Congress. Surely, whatever a multitude and diversity of minds can in a few days do for the promotion of knowledge may be done here. Everyone has something he may teach, much more that he may learn; and, in the midst of an apparent utter confusion, knowledge will increase and multiply. It has been said, indeed, that truth is more likely to emerge from error than from confusion, and in some instances this is true; but much of what we call confusion is only the order of Nature not yet discerned; and so it may be here. Certainly it is from what seems like the confusion of successive meetings such as this that that kind of truth emerges which is among the best moving and directing forces in the scientific as well as in the social life—the truth which is told in the steady growth of general opinion.

But it is not proposed to leave the work of the Congress to what would seem like chance and disorder, good as the result might be; nor yet to the personal influences by which we may all be made fitter for work, though these may be very potent. In the stir and controversy of meetings such as we shall have there cannot fail to be useful emulation; by the examples that will appear of success in research, many will be moved to more enthusiasm, many to more keen study of the truth; our range of work will be made wider, and we shall gain that greater interest in each other's views and that clearer apprehension of them which are always attained by personal acquaintance and by memories of association in pleasure as well as in work. But as it will not be left to chance, so neither will sentiment have to fulfil the chief duties of the Congress.

Following the good example of our predecessors, certain subjects have been selected which will be chiefly though not exclusively discussed, and the discussions are to be in the sections into which we shall soon divide.

Of these subjects it would not be for me to speak even if I were competent to do so, unless I may say that they are so numerous and complete that, together with the opening addresses of the Presidents of Sections, they leave me nothing but such generalities as may seem commonplace. They have been selected, after the custom of former meetings, from the most stirring and practical questions of the day; they are those which must occupy men's minds, and on which there is at this time most reason to expect progress, or even a just decision, from very wide discussion. They will be discussed by those most learned in them, and in many instances by those who have spent months or years in studying them, and who now offer their work for criticism and judgment.

I will only observe that the subjects selected in every section involve questions in the solution of which all the varieties of mind and knowledge of which I have spoken may find their use. For there are questions not only on many subjects, but in all stages of progress towards settlement. In some the chief need seems to be the collection of facts well observed by many persons. I say by many, not only because many facts are wanted, but because in all difficult research it is well that each apparent fact should be observed by many; for things are not what they appear to each one mind. In that which each man believes that he observes there is something of himself; and for certainty, even on matters of fact, we often need the agreement of many minds, that the personal element of each may be counteracted. And much more is this necessary in the consideration of the many questions which are to be decided by discussing the several values of admitted facts and of probabilities, and of the conclusions drawn from them. For on questions such as these minds of all kinds may be well employed. Here there will be occasion even for those which are not unconditionally praiseworthy, such as those that habitually doubt, and those to whom the invention of arguments is more pleasing than the mere search for truth. Nay, we may be able to observe the utility even of error. We may not, indeed, wish for a prevalence of errors; they are not more desirable than are the crime and misery which evoke charity. And yet in a Congress we may palliate them, for we may see how, as we may often read in history, errors, like doubts and contrary pleadings, serve to bring out the truth, to make it express itself in clearest terms and show its whole strength and value. Adversity is an excellent school for truth as well as for virtue.

But that which I would chiefly note, in relation to the great variety of minds which are here, is that it is charac-

teristic of that mental pliancy and readiness for variation which is essential to all scientific progress, and which a great International Congress may illustrate and promote. In all the subjects for discussion we look for the attainment of some novelty and change in knowledge or belief; and after every such change there must ensue a change in some of the conditions of thinking and of working. Now, for all these changes minds need to be pliant and quick to adjust themselves. For all progressive science there must be minds that are young whatever may be their age.

Just as the discovery of auscultation brought to us the necessity for a refined cultivation of the sense of hearing, which was before of only the same use in medicine as in the common business of life; or, as the employment of the numerical method in estimating the value of facts required that minds should be able to record and think in ways previously unused; or, as the acceptance of the doctrine of evolution has changed the course of thinking in whole departments of science—so is it, in less measure, in every less advance of knowledge. All such advances change the circumstances of the mental life, and minds that cannot or will not adjust themselves become less useful or must, at least, modify their manner of utility. They may continue to be the best defenders of what is true; they may strengthen and expand the truth, and may apply it in practice with all the advantages of experience; they may thus secure the possessions of science and use them well; but they will not increase them.

It is with minds as with living bodies. One of their chief powers is in their self-adjustment to the varying conditions in which they have to live. Generally, those species are the strongest and most abiding that can thrive in the widest range of climate and of food. And, of all the races of men, they are the mightiest and most noble who are, or by self-adjustment can become, most fit for all the new conditions of existence in which by various changes they may be placed. These are they who prosper in great changes of their social state; who, in successive generations, grow stronger by the production of a population so various that some are fitted to each of all the conditions of material and mode of life which they can discover or invent. These are most prosperous in the highest civilisation; these whom Nature adapts to the products of their own arts.

Or, among other groups, the mightiest are those who are strong alike on land and sea; who can explore and colonise, and in every climate can replenish the earth and subdue it; and this not by tenacity or mere robustness, but rather by pliancy and the production of varieties fit to abide and increase in all the various conditions of the world around.

Now, it is by no distant analogy that we trace the likeness between these in their successful contests with the material conditions of life and those who are to succeed in the intellectual strife with the difficulties of science and of art. There must be minds which in variety may match with all the varieties of the subject matters, and minds which, at once or in swift succession, can be adjusted to all the increasing and changing modes of thought and work.

Such are the minds we need; or rather, such are the minds we have; and these in great meetings prove and augment their worth. Happily the natural increase in the variety of minds in all cultivated races is—whether as cause or as consequence—nearly proportionate to the increasing variety of knowledge. And it has become proverbial and is nearly true in science and art, as it is in commerce and in national life, that, whatever work is to be done, men are found or soon produced who are exactly fit to do it.

But it need not be denied that, in the possession of this first and chiefest power for the increase of knowledge, there is a source of weakness. In works done by dissimilar and independent minds, dispersed in different fields of study, or only gathered into self-assorted groups, there is apt to be discord and great waste of power. There is, therefore, need that the workers should from time to time be brought to some consent and unity of purpose; that they should have opportunity for conference and mutual criticism; for mutual help and the tests of free discussion. This it is which, on the largest scale and most effectually, our Congress may achieve; not, indeed, by striving after a useless and happily impossible uniformity of mind or method, but by diminishing the lesser evil of waste and discord which is attached to the far greater good of diversity and independence. Now, as in numbers and variety the Congress may represent the whole multitude of workers everywhere dispersed, so in its gathering and concord it may represent a common consent that, though we may be far apart and different, yet our work is and shall be essentially one; in all its parts mutually dependent, mutually helpful, in no part complete or self-sufficient. We may thus declare that as we who are many are met to be members of one body, so our work for science shall be one, though manifold; that as we, who are of many nations, will for a time forget our nationalities, and will even repress our patriotism, unless for the promotion of a friendly rivalry, so will we in our work, whether here and now or everywhere and always, have one end and one design—the promotion of the whole science and whole art of healing.

It may seem to be a denial of this declaration of unity that, after this general meeting, we shall separate into sections more numerous than in any former Congress. Let me speak of these sections to defend them; for some maintain that, even in such a division of studies as these may encourage, there is a mischievous dispersion of forces. The science of medicine, which used to be praised as one and indivisible, is broken up, they say, among specialists, who work in conflict rather than in concert, and with mutual distrust more than mutual help.

But let it be observed that the sections which we have instituted are only some of those which are already recognised, in many countries, in separate societies, each of which has its own place, and rules of self-government and its own literature. And the division has taken place naturally in the course of events which could not be hindered. For the partial separation of medicine, first from the other natural sciences, and now into sections of its own, has been due to the increase of knowledge being far greater than the increase of individual mental power.

I do not doubt that the average mental power constantly increases in the successive generations of all well-trained peoples; but it does not increase so fast as knowledge does, and thus, in every science, as well as in our own, a small portion of the whole sum of knowledge has become as much as even a large mind can hold and duly cultivate. Many of us must, for practical life, have a fair acquaintance with many parts of our science, but none can hold it all; and for complete knowledge, or for research, or for safely thinking out beyond what is known, no one can hope for success unless by limiting himself within the few divisions of the science for which, by nature or by education, he is best fitted. Thus our division into sections is only an instance of that division of labour which in every prosperous nation we see in every field of active life, and which is always justified by more work better done.

Moreover, it cannot be said that in any of our sections there is not enough for a full strong mind to do. If anyone will doubt this let him try his own strength in the discussions of several of them.

In truth, the fault of specialism is not in narrowness, but in the shallowness and the belief in self-sufficiency with which it is apt to be associated. If the field of any specialty in science be narrow it can be dug deeply. In science, as in mining, a very narrow shaft, if only it be carried deep enough, may reach the richest stores of wealth, and find use for all the appliances of scientific art. Not in medicine alone, but in every department of knowledge, some of the grandest results of research and of learning, broad and deep, are to be found in monographs on subjects that to the common mind seemed small and trivial.

And study in a Congress such as this may be a useful remedy for self-sufficiency. Here every group may find a rare occasion, not only for an opportune assertion of the supreme excellence of its own range and mode of study, but for the observation of the work of every other. Each section may show that its own facts must be deemed sure, and that by them every suggestion from without must be tested; but each may learn to doubt every inference of its own which is not consistent with the facts or reasonable beliefs of others. Each may observe how much there is in the knowledge of others which should be mingled with its own; and the sum of all may be the wholesome conviction of all that we cannot justly estimate the value of a doctrine in one part of our science till it has been tried in many or in all.

We were taught this in our schools, and many of us have taught that all the parts of medical science are necessary to the education of the complete practitioner. In the independence of later life some of us seem too ready to believe that the parts we severally choose may be self-sufficient, and that what others are learning cannot much concern us. A fair study of the whole work of the Congress may convince

us of the fallacy of this belief. We may see that the test of truth in every part must be in the patient and impartial trial of its adjustment with what is true in every other. All perfect organisations bear this test; all parts of the whole body of scientific truth should be tried by it.

Moreover, I would not, from a scientific point of view, admit any estimate of the comparative importance of the several divisions of our science, however widely they may differ in their present utilities. And this I would think right, not only because my office as President binds me to a strict impartiality and to the claim of freedom of research for all, but because we are very imperfect judges of the whole value of any knowledge, or even of single facts; for every fact in science, wherever gathered, has not only a present value, which we may be able to estimate, but a living and germinal power of which none can guess the issue.

It would be difficult to think of anything that seemed less likely to acquire practical utility than those researches of the few naturalists who, from Leeuwenhoeck to Ehrenberg, studied the most minute of living things—the vibrionidæ. Men boasting themselves as practical might ask, "What good can come of it?" Time and scientific industry have answered, "This good: those researches have given a more true form to one of the most important practical doctrines of organic chemistry; they have introduced a great beneficial change in the most practical part of surgery; they are leading to one as great in the practice of medicine; they concern the highest interests of agriculture; and their power is not yet exhausted."

And as practical men were, in this instance, incompetent judges of the value of scientific facts, so were men of science at fault when they missed the discovery of anæsthetics. Year after year the influences of laughing gas and of ether were shown the one fell to the level of the wonders displayed by itinerant lecturers, students made fun with the other; they were the merest practical men, men looking for nothing but what might be straightway useful, who made the great discovery which has borne fruit not only in the mitigation of suffering, but in a wide range of physiological science.

The history of science has many similar facts, and they may teach that any man will be both wise and dutiful if he will patiently and thoughtfully do the best he can in the field of work in which, whether by choice or chance, his lot is cast. There let him at least search for truth, reflect on it, and record it accurately; let him imitate that accuracy and completeness of which I think we may boast that we have, in the descriptions of the human body, the highest instance yet attained in any branch of knowledge. Truth so recorded cannot remain barren.

In thus speaking of the value of careful observation and records of facts, I seem to be in agreement with the officers of all the sections; for without any intended consent they have all proposed such subjects for discussion as can be decided only by well collected facts and fair direct inductions from them. There are no questions on theories or mere doctrine. This I am sure may be ascribed not to any disregard of the value of good reasoning or of reasonable hypotheses, but partly to the just belief that such things are ill-suited for discussion in large meetings, and partly to the fact that we have no great opponent schools, no great parties named after leaders or leading doctrines about which we are in the habit of disputing. In every section the discussions are to be on definite questions, which, even if they be associated with theory or general doctrines, may yet be soon brought to the test of fact; there is to be no use of doctrinal touchstones.

I am speaking of no science but our own. I do not doubt that in others there is advantage in dogma, or in the guidance of a central organising power, or in divisions and conflicting parties. But in the medical sciences I believe that the existence of parties founded on dominant theories has always been injurious; a sign of satisfaction with plausible errors, or with knowledge which was even for the time imperfect. Such parties used to exist, and the personal histories of their leaders are some of the most attractive parts of the history of medicine; but, although in some instances an enthusiasm for the master-mind may have stirred a few men to unusual industry, yet very soon the disciples seem to have been fascinated by the distinctive doctrine, content to bear its name, and to cease from active scientific work. The dominance of doctrine has promoted the habit of inference, and repressed that of careful observation and induction. It has encouraged that fallacy to which we are all too prone, that we have at length reached an elevated sure position on which we may rest, and only think and guide. In this way specialism in doctrine or in method of study has hindered the progress of science more than the specialism which has attached itself to the study of one organ or of one method of practice. This kind of specialism may enslave inferior minds; the specialism of doctrine can enchant into mere dreaming those that should be strong and alert in the work of free research.

I speak the more earnestly of this because it may be said, if our Congress be representative, as it surely is, may we not legislate? May we not declare some general doctrines which may be used as tests and as guides for future study? We had better not.

The best work of our International Congress is in the clearing and strengthening of the knowledge of realities; in bringing, year after year, all its force of numbers and varieties of minds to press forward the demonstration and diffusion of truth as nearly to completion as may from year to year be possible. Thus, chiefly, our Congress may maintain and invigorate the life of our science. And the progress of science must be as that of life. It sounds well to speak of the temple of science and of building and crowning the edifice. But the body of science is not as any dead thing of human work, however beautiful; it is as something living, capable of development and a better growth in every part. For as in all life the attainment of the highest condition is only possible through the timely passing-by of the less good, that it may be replaced by the better, so is it in science. As time passes, that which seemed true and was very good becomes relatively imperfect truth, and the truth more nearly perfect takes its place.

We may read the history of the progress of truth in science as a palæontology. Many things which, as we look far back, appear, like errors, monstrous and uncouth creatures, were, in their time, good and useful, as good as possible. They were the lower and less perfect forms of truth which, amid the floods and stifling atmospheres of error, still survived; and just as each successive condition of the organic world was necessary to the evolution of the next following higher state, so from these were slowly evolved the better forms of truth which we now hold.

This thought of the likeness between the progress of scientific truth and the history of organic life may give us all the better courage in a work which we cannot hope to complete, and in which we see continual and sometimes disheartening change. It is, at least, full of comfort to those of us who are growing old. We that can read in memory the history of half a century might look back with shame and deep regret at the imperfections of our early knowledge if we might not be sure that we held, and sometimes helped onward, the best things that were, in their time possible, and that they were necessary steps to the better present, even as the present is to the still better future. Yes, to the far better future; for there is no course of Nature more certain than is the upward progress of science. We may seem to move in circles, but they are the circles of a constantly ascending spiral; we may seem to sway from side to side, but it is only as on a steep ascent which must be climbed in zigzag.

What may be the knowledge of the future none can guess. If we could conceive a limit to the total sum of mental power which will be possessed by future multitudes of well-instructed men, yet could we not conceive a limit to the discovery of the properties of materials which they will bend to their service. We may find the limit of the power of our unaided limbs and senses; but we cannot guess at a limit to the means by which they may be assisted, or to the invention of instruments which will become only a little more separate from our mental selves than are the outer sense organs with which we are constructed.

In the certainty of this progress, the great question for us is what shall we contribute to it? It will not be easy to match the recent past. The advance of medical knowledge within one's memory is amazing, whether reckoned in the wonders of the science not yet applied, or in practical results in the general lengthening of life, or, which is still better, in the prevention and decrease of pain and misery, and in the increase of working power. I cannot count or recount all that in this time has been done; and I suppose there are very few, if any, who can justly tell whether the progress of medicine has been equal to that of any other great branch of knowledge during the same time. I believe it has been; I know that the same rate of progress cannot be maintained without the constant and wise work of thousands of good in-

tellects; and the mere maintenance of the same rate is not enough, for the rate of the progress of science should constantly increase. That in the last fifty years was at least twice as great as that in the previous fifty. What will it be in the next, or, for a more useful question, what shall we contribute to it?

I have no right to prescribe for more than this week. In this let us do heartily the proper work of the Congress—teaching, learning, discussing, looking for new lines for research, planning for mutual help, forming new friendships. It will be hard work if we will do it well; but we have not met for mere amusement, or for recreation, though for that I hope you will find fair provision, and enjoy it the better for the work preceding it.

And when we part let us bear away with us, not only much more knowledge than we came with, but some of the lessons for our conduct in the future which we may learn in reflecting the work of our Congress.

In the number and intensity of the questions brought before us we may see something of our responsibility. If we could gather into thought the amounts of misery or happiness, of helplessness or of power for work, which may depend on the answers to all the questions that will come before us, this might be a measure of our responsibility. But we cannot count it; let us imagine it; we cannot, even in imagination, exaggerate it. Let us bear it always in our mind, and remind ourselves that our responsibility will constantly increase. For, as men become in the best sense better educated, and the influence of scientific knowledge on their moral and social state increases, so among all sciences there is none of which the influence, and therefore the responsibility, will increase more than ours; because none more intimately concerns man's happiness and working power.

But more clearly in the recollections of the Congress we may be reminded that in our science there may be, or, rather, there really is, a complete community of interest among men of all nations. On all the questions before us we can differ, discuss, dispute, and stand in earnest rivalry; but all consistently with friendship, all with readiness to wait patiently till more knowledge shall decide which is in the right. Let us resolutely hold to this when we are apart; let our internationality be a clear, abiding sentiment, to be, as now, declared and celebrated at appointed times, but never to be forgotten. We may, perhaps, help to gain a new honour for science if we thus suggest that in many more things, if they were as deeply and dispassionately studied, there might be found the same complete identity of international interests as in ours.

And then, let us always remind ourselves of the nobility of our calling. I dare to claim for it, that among all the sciences, ours, in the pursuit and use of truth, offers the most complete and constant union of those three qualities which have the greatest charm for pure and active minds—novelty, utility, and charity. These three, which are sometimes in so lamentable disunion, as in the attractions of novelty without either utility or charity, are in our researches so combined that, unless by force or wilful wrong, they hardly can be put asunder. And each of them is admirable in its kind. For in every search for truth we can not only exercise curiosity, and have the delight—the really elemental happiness—of watching the unveiling of a mystery, but, on the way to truth, if we look well round us, we shall see that we are passing among wonders more than the eye or mind can fully apprehend. And as one of the perfections of Nature is that, in all her works, wonder is harmonised with utility, so is it with our science. In every truth attained there is utility either at hand or among the certainties of the future. And this utility is not selfish: it is not in any degree correlative with money-making; it may generally be estimated in the welfare of others better than in our own. Some of us may, indeed, make money and grow rich; but many of those that minister even to the follies and vices of mankind can make much more money than we. In all things costly and vainglorious they would far surpass us if would compete with them. We had better not compete where wealth is the highest evidence of success; we can compete with the world in the nobler ambition of being counted among the learned and the good who strive to make the future better and happier than the past. And to this we shall attain if we will remind ourselves that, as in every pursuit of knowledge there is the charm of novelty, and in every attainment of truth utility, so in every use of it there may be charity. I do not mean only the charity which is in hospitals or in the service of the poor, great as is the privilege of our calling in that we may be its chief ministers; but that wider charity which is practised in a constant sympathy and gentleness, in patience and self-devotion. And it is surely fair to hold that, as in every search for knowledge we may strengthen our intellectual power, so in every practical employment of it we may, if we will, improve our moral nature; we may obey the whole law of Christian love, we may illustrate the highest induction of scientific philanthropy.

Let us, then, resolve to devote ourselves to the promotion of the whole science, art, and charity of medicine. Let this resolve be to us as a vow of brotherhood; and may God help us in our work.

TRANSLATION OF AN

ADDRESS

ON THE

VALUE OF PATHOLOGICAL EXPERIMENT.

Delivered at the International Medical Congress,

By PROFESSOR RUDOLF VIRCHOW.

GENTLEMEN,—In the last International Medical Congress at Amsterdam, as reporter on the training of medical men, I discussed the question as to how far the experimental method was necessary in teaching, and I came to the conclusion that it should be applied to as large an extent as possible, and that Vivisection especially was an indispensable means.[1] But in a still greater degree I found it necessary to lay stress on the importance of this method for the purposes of investigation, and in opposition to those who continued to oppose with ever-increasing vehemence the experimenting investigators, on account of both the direction and the method of their experiments. I was able to say amid the eager applause of the numerous members of the Congress, without a single contradiction, "None of those who attack vivisection as an aid to science have any conception of the true importance of science, nor of the value of this means of acquiring knowledge."

In the two years which have elapsed since then, the agitation of the opponents has increased considerably, not only in extent, but also in aim. One country after another has been drawn into its net, and international unions have been founded to attain greater results by united effort. People are no longer satisfied with the concessions made by the English Legislature in the year 1876. The demands have increased. A petition from the new Leipzig Society for the Protection of Animals, dated March 8th of this year, demanded of the German Reichstag that a law should be passed by which cruelty to animals, under the pretence of scientific investigation, should be punished by imprisonment for a term varying from not less than four weeks to two years, and also by deprivation of civil rights. It is true that all do not go so far as this. Some demand not exactly the complete suppression of all experiments on living animals, but only a more or less extensive limitation of the same. But they also make no secret of the fact that this concession is only a provisional one, and they demand that even the official laboratories of the Universities should be placed under the control of the societies for the protection of animals in such a manner that access to the laboratories should always be permitted to their members.

It would be a great mistake to suppose that this movement has no prospects of success and is harmless, if only through its evident exaggeration. On the contrary, unmistakable signs show that it has won powerful allies, and that in several countries the danger is becoming more imminent, that even those State institutions especially established for experimental purposes may be attacked in the scientific freedom of their methods. All the more does it appear right that the representatives of medical science should defend their position, and that they should also oppose international attacks by international means of protection. *But the most potent means of protection is truth,*

[1] Congrès Périodique International des Sciences Médicales, 6 Session. Amsterdam, 1879, 1880, p. 146. Archiv f. Pathol. Anat., vol. lxxxv.

and here, above all, *truth founded upon sufficient knowledge*. If we cannot prove our just right before the whole world, and on the strength of this right agree among ourselves, our cause must from the very beginning be regarded as lost.

The attacks which are directed against us when more closely examined fall in their main points into two categories. On the one hand, it is insisted that the experimental method, indeed the whole modern medical science, is materialistic, if not nihilistic in its aim; it sins against feeling, against morality, against religion. On the other hand, it is denied that the introduction of experiments on animals has been of any real use, that medical science has been materially furthered by it, and especially that the cure of diseases has since then made recognisable advance. Even those who acknowledge some advance, think that as much could have been discovered by anatomy alone, as by experiments on living animals.

Such objections are not new to anyone who knows the history of medical science. For centuries, on similar or identical grounds, the dissection of human bodies was forbidden, and anatomists were confined to the dissection of dead animals, if, indeed, the scornful question were not asked, as by Paracelsus, Vesalius's contemporary, whether anatomy were of any use whatever. The feeling of the masses revolts against the dissection of human corpses; and it is well known that the Church did not grant permission for it until the beginning of the fourteenth century; and even then with restrictions which were much greater than those under which our opponents of to-day will permit vivisection. It was no matter of chance that not till the time of the Church Reformation could the great Vesalius obtain a clear field to test by his own investigations on human bodies the truth of Galen's traditional dogmas, and to set in the place of animal anatomy, which for thousands of years had been the basis of all medical conceptions of the internal formation of human beings, the real human anatomy.

But as for pathological anatomy, what opposition has it not had to overcome even since that time? In this respect nothing is more instructive than the account which Wepfer, the celebrated discoverer of the hæmorrhagic nature of ordinary apoplexy, gives of the hostility with which he was pursued when, towards the middle of the seventeenth century, the council of the city of Schaffhausen permitted him to dissect the corpses of those who died in the hospital and infirmary. But to those who told him that it was disgraceful and abominable to stain his hands with blood and ichor, he answered that his hands could be washed with a little water, but that ignorance in anatomical matters was much more disgraceful and harmful, and would cause a disgrace to inexperienced physicians and surgeons that not the Rhine or the ocean itself could wash away[2] and that therefore the study of anatomy was rather to be praised and supported by those who managed the affairs of the State.

In fact, since that time one Government after another has recognised the decisive importance of anatomical science. Wherever education has extended there at this day human corpses are dissected. Even the layman recognises that without the most exact knowledge of the construction of the human body, and of the changes which disease and cure produce in it, an intelligent procedure on the physician's part is impossible. Who could disagree with this conclusion? Anyone who is able to contemplate the history of science as a whole knows that the two greatest epochs of the revival and remodelling of medical science commenced with the definite establishment of the two principal branches of human anatomy, and were essentially necessitated thereby. In the sixteenth century it was physiological anatomy which brought about the final victory of empiricism over dogmatism, of science over tradition; in the eighteenth century it was pathological anatomy which replaced mysticism by realism, speculation by autopsy, uncertain feeling and guessing by methodised thought. It is true the opponents also called this materialism. But Harvey[3] has well said: "Sicut sanorum et boni habitus corporum dissectio plurimum ad *philosophiam* et rectam physiologiam facit, ita corporum morbosorum et cachecticorum inspectio potissimum ad pathologiam *philosophicam*."

There was only one period in antiquity when a serious attempt was made towards the independent development of human anatomy. This was the time of the Alexandrian school in the third century B.C., when Erasistratos and his followers under the protection of the Ptolemies undertook the first regular dissection of human corpses. The school only existed for a short time, and yet it produced the first evident disturbance of the humoro-pathological system. With the more exact knowledge of the arrangement of the nerves there arose a new and better generation of solidists, the empiricists rose against the dogmatists, and although they were soon enough suppressed again, yet they left behind them as a lasting inheritance the idea that there is a certain limit to pious attainment, that the right of the individual to the preservation of the integrity of his body is broken by death, and that the veil which hides the secret of life cannot be lifted without the violent disturbance of the connexion between the parts of the body. It was this idea which, when at length it was realised, produced modern medical science. But even eighteen centuries after the Alexandrians the pressure of the humoro-pathological system kept down every independent movement in medical science. In this long period there is no positive advance in pathology to be recorded. For rightly has Bacon[4] said, "Quæ in natura fundata sunt, crescunt et augentur: quæ autem in Opinione, variantur, non augentur." The ancient humoro-pathology was not capable of development, because it was founded not on Nature, but on doctrinal opinions. Different as were the origins from which they sprang, yet everywhere Galenism allied itself to orthodoxy; among the Arabs to Islamism, in the West to Christianity, and the powerful movement of the Reformation was required to burst the chains in which ancient custom and hierarchical discipline held fettered the opinions even of the physicians. From Erasistratos to Vesalius, and finally to Morgagni, is so immense an advance that it cannot remain hidden even from the dullest eye. Not only the outward form, but the whole essence of medical science has been changed by it. If after Vesalius, and even after Morgagni, humoro-pathology continued to be spoken of as a still existing thing, and if I myself was obliged to combat the last professed humoro-pathologist in Rokitansky, yet we must not forget that this was no longer the humoro-pathology of Galen and Hippocrates. Paracelsus had already done away with the "four cardinal juices," modern medical science only knew the real juices which flow in the vessels, and thence penetrate into the tissues. This modern humoro-pathology was essentially hæmato-pathology. Only in name did it coincide with the humoro-pathology of the ancients; in reality it was something quite different.

But hæmato-pathology has now also been happily done away with, and also by a movement due to anatomical teaching. From the first still very uncertain experiments which Bichat made at the beginning of this century in the domain of the so-called general or philosophical anatomy, up to the ever swifter advances which have been made at the present day by means of the microscope in the understanding of the more delicate functions of healthy and diseased life, attention has been more and more attracted from the coarser relations of whole regions and organs of the body to the tissues which compose these organs, and to the elements which again within these tissues serve as centres of activity. Immediately after Schwann had demonstrated the importance of cells for the development of tissue, Johannes Müller and John Goodsir applied the new ideas most successfully to pathological processes; and we may now say with satisfaction, on looking back at a period which we have ourselves lived through, and which comprises little more than a generation, that there never before was a time when an equally great zeal in investigation, or anything approaching to a similar advance in knowledge and ability, has shown itself in physicians. The increase of the means of labour, the ever-growing competition in research, the unmistakably greater profundity in the consideration of problems—all these are phenomena of the most satisfactory kind, and we should be very ungrateful did we not recognise that they are to be ascribed in great measure to the improvement of the means of instruction and the increase in the number of laboratories.

No one can be more willing to acknowledge the great value of anatomical studies for the development of medical science than one who has made it part of his life's work to place anatomy and histology in that prominent position in the estimation of contemporaries which they deserve.

[2] Joh. Jac. Wepfer, Observ. Anatom., ex cadaveribus eorum, quos sustulit apoplexia. Schaffhusii, 1658. Præfatio: Turpior et dammerior rerum anatomicarum ignorantia est, quæ imperitia Medicis et Chirurgis ignominiam parit, quam nec Rhenus, nec Oceanus abluere poterit.

[3] Guil. Harveii Exercit. Anat. II. de motu cordis et sanguinis circulatione. Roter., 1671, p. 174.

[4] Franc. Baconis de Verulamio, Novum Organum Scientarum. Edit Sec. Amstel., 1660, p. 73.

Nothing can be further from my thoughts than to contradict those who expect also for the future of medical science a great advantage through the pursuit of these studies. By all means let the youth now growing up, who after us will have to secure the advance of medical science, learn by our example how useful it is to place in anatomy the sure foundation of our knowledge; it is certain that by this means much that has remained obscure to us will be made clear to them.

But we must not submit to be forced back on to this way as the only one permissible. If once the attempt were successful to prevent entirely, or in great part, experiments on living animals, probably the same procedure which has now been begun against vivisection would commence against mortisection. Only it would no longer be societies for the protection of animals that we should see opposed to us, but societies for the protection of human corpses. Imprecations would be hurled no longer at animal torture, but at the desecration of corpses. Under the banner of humanity, which is now unfurled for animals, the campaign against the barbarity of the physicians would be preached in a much more intrusive manner. The feeling of the masses would be appealed to, the mother's feeling for the body of her child, the son's for the beloved remains of the parents. It would be shown that the dismemberment of human corpses roughened manners, was contrary to Christianity. It would be shown that the anatomy of human beings was useless for the treatment of diseases, and possibly ignorant or frightened or self-seeking physicians might be found to appear as witnesses against the science. The mildest of our opponents would perhaps propose the compromise that we should once more take the anatomy of animals for the basis of our instruction. In short, we should be thrown back to the times before Mondini, before Erasistratos.

These ideas are by no means the birth of a frightened fantasy. The study of history teaches us sufficiently that victorious fanaticism knows no limits. It desires to gather in all the fruits of its victory, and even when the leaders are satisfied, the excited masses still press on, and draw the full conclusions. We need not quite go back to antiquity to bring before our eyes the state of such minds. In no country at the present day are examples wanting which may be recognised by the bodily eye, for besides the societies against the scientific torture of animals, there exist everywhere, though generally in a more modest form, all sorts of brotherhoods and associations which work energetically against scientific examination of corpses. It would only require a passionate and excitable agitation like that at present opened against the "torture-chambers of science," in order to denounce the dissecting-rooms to the indignation of the people as places for the brutalising of youth. Whoever undertakes to portray the dissection of a human being, or indeed an anatomical theatre, with the extravagance of imagination which is now employed in the description of a physiological laboratory, will not want for readers who will turn away with shudders and horror from the misdeeds of the anatomists.

It will be in vain, then, to remind them that no single school of medicine has ever yet existed which has founded any lasting advances in the science or art of healing without a thorough knowledge of anatomy. The homœopaths and the so-called nature-doctors, who are already at hand to strengthen the ranks of the anti-vivisectors, will come forward and extol their successes. The scepticism which from time to time enters even the ranks of the physicians, and that finds followers but too easily among those who have vainly sought medical aid for themselves or their friends, will scornfully point out how often the physician stands powerless in the presence of disease. Therapeutics will be rejected as worthless lumber; and we shall be told, as we already are by the petitions of the societies for the protection of animals, that therapeutics may be replaced by hygiene, the treatment of individual patients by mere sanitary arrangements. And the attempt will be made to awaken the belief that prophylaxis can exist without anatomy and experiments on animals.

In so large an assembly of physicians as this, a glance at those present shows into how many special branches the medical science of to-day has been divided. Not each of these special branches requires in the same degree and equally continuously all the means of investigation and of scientific preparation which are indispensable to medical science as a whole. Therefore from time to time, a visible one-sidedness appears in certain of these special branches. Its representatives consider themselves self-sufficient, and look down with indifference, sometimes with a sort of lofty contempt, on the rest of medical science. Not even the purely scientific studies are quite secure from this one-sidedness; on the contrary, human conceit, and the tendency to over-estimation of self, are found here even more than in the practical studies. We ourselves have seen how organic chemistry, by a most one-sided application of a very moderate treasure of knowledge, has attempted, and not without some temporary success, to prescribe its laws to medical science; and numerous practical physicians, unmindful of the history of our science, have sought salvation in a new kind of chemistry. Indeed, I remember very distinctly that when I first entered on a scientific career, the hope of a purely physical system of biology was so enthusiastic that every attempt of the morphological studies was treated as antiquated.

We have not allowed ourselves to be deterred by this from continuing anatomical investigation with all our energies, and we are now in the fortunate position of seeing it everywhere recognised that every advance in microscopical anatomy also brings with it an advance in the knowledge of physiology. The physiologists themselves have more and more become histologists. But no one may demand of them that physiology should be entirely resolved into histology. We must not desire to replace one kind of one-sidedness by another. What is necessary for all branches of the great medical science in common is the *comprehension of life*. But this can be attained just as little by the outward regarding of the living being as by the one-sided examination of the dead. It can be attained by no single study or specialty; it is rather the general result gained from the achievements of all the special branches of the science.

Whatever can be attained by the mere outward observation of living beings ancient medical science has thoroughly taught. For thousands of years patients and people in health have been watched with eager industry, and in fact the most valuable material has been collected in a most ingenious manner, but in reality without getting beyond the "symptoms." What was perceived were "signs" of an internal process which was not perceived, and the possible perception of which was despaired of from the very beginning. Life itself also stood beyond the reach of observation; it was only a subject of speculation. Ingenious formulæ were set up, which, according to the general tendency of the mind of the individual or of the time, were spiritualistic or materialistic, but all agreed in the conviction that life itself was a transcendental and metaphysical problem. For the practical physician actual knowledge began with symptomatology, for the disease as such was in appearance not less transcendental than the life itself, whose counterpart it represented.

Now, how has it come about that symptomatology has completely lost the high place in which it stood little less than a generation ago, so entirely that at most universities it is no longer even read as a special subject? Have signs no longer any importance for the physician? Can he diagnose without knowing the symptoms? Certainly not. But for the scientific doctor the symptoms are no longer the expression of a hidden power, which is only to be recognised in its outer workings; he examines into this power itself, and tries to find its seat, in the hope of discovering in its seat also its nature. Therefore, the first question of the pathologist, as of the biologist, is, "Where?" That is the anatomical question. Whether we seek to discover the seat of disease or of life by the anatomical knife, or only by the eye or the hand, whether we cut or only examine, still the method of regarding is always anatomical. Therefore the founder of pathological anatomy logically named his book, which contained his first principles, "De sedibus morborum," and therefore this book became the point of issue of a movement which in a few decades has changed the whole face of science.

This change has been most fully accomplished in the cure of diseases of the eye. Who could deny the assertion that the ophthalmology of to-day has scarcely a point of resemblance with that of the last century? Who would be content with the symptom of amaurosis? Who would despair of understanding the nature of glaucoma? Every oculist has the means in his hand of studying the things themselves, and not merely their signs. Even the anti-vivisectionists acknowledge that ophthalmology is a successful branch. But they forget that not all of the bodily organs are so favourably situated and constructed for the observv-

tion of the internal process as the eyeball. Since the wonderful discovery of the ophthalmoscope anatomical analysis, even without any application of the knife, may be carried into such detail that we can observe and study separately the smallest sections of tissue in the fundus of the eye, and even single cells or groups of cells, as in an artificial preparation of a dissected eye. But we must not forget that long anatomical and physiological preliminary studies were needed to discover what can now be so easily seen. The structure, arrangement, and function of each separate part had first to be laboriously discovered before it became possible to recognise, by a hasty glance at the altered tissue, what it really was that was changed; and no young physician will attain a true comprehension of the nature of these changes if he has not previously learnt to know very exactly all the possible pathological changes of the single constituents of the eye.

It is all very well for some people to reproach us because all branches of medical science have not attained such a height as ophthalmology. This will never be the case. Just as it is easier to search the sea into its very depths than the firm land, so the most transparent organ of the body will always be the most convenient for medical diagnosis and treatment. While a cysticercus quite at the back of the retina can be observed without difficulty, it will always be necessary to bring under observation a muscle cysticercus or a trichina in a diseased person by vivisection. We shall never be able to demand that every medical specialty should rival ophthalmology in security of treatment and understanding, but we may only seek the standard of our judgment in the application of the method of ophthalmology to the other special branches. This method is the anatomical, or, as it may also be called, the localising method.

Here we have reached the point which is, as it were, the boundary between ancient and modern medical science. *The principle of modern medical science is localisation.* Those who are continually asking what modern science has done for the practical art of healing may be told that every branch of medical practice has submitted to the principle of localisation, not only in pathology, but also in therapeutics, and that hereby also the greatest benefits have been obtained for the sick. It is quite superfluous to seek for single examples by which to show of what use modern science has been. There are plenty of such examples; but we do not require them, for we can point to the general character of modern medical science. All those branches which even formerly had a natural proper inclination towards localisation, such as surgery, dermatology, &c., have now quite logically continued to develop in the same manner. But those which have retained from the ancient humoro-pathology a tendency to set up generalising formulæ, gradually cast off the tradition that has grown dear to them, and more and more it is understood that generalisation is, in truth, nothing else than multiplication of the foci, and the cure of a so-called general disease means the extinction of all single foci. That was in fact a reform of head and limbs, and whoever does not realise that, ought not to say that he has intelligently followed the advance of science.

The notion of the universal truth of the doctrine of localisation of disease, and of the multiplication of the foci of disease in the same individual, is, as was often stated in opposition to me at the beginning of my professional career, in direct opposition to the conception of the unity of disease, or, to express it in traditional language, to the *ens morbi*. My own contemporaries have laid great stress on this conception; they considered that the practical physician would be led into arbitrary, and therefore dangerous speculations if, when he had to do with a single case of disease, he regarded disease as a multiple. On the contrary, it seemed to me that the physician would be led into a fruitless speculation, dangerous to the individual patient, if he presumed a morbid entity corresponding to the opinion he has been taught or his own private opinion and from that calculated his prognosis and therapeutics. However, these considerations derived from medical practice as to the utility of a particular conception of disease cannot decide about the truth of the same, and it is that alone which can be of moment. How are we to determine that?

Everyone agrees that disease premises life. In a dead body there is no disease. With death life and disease are together extinguished. It was this consideration that led the physicians of former times to the conception of disease as a nature itself animated, even endowed with a soul, which took its place in the body along with the vital principle. Many went so far as to define disease as a combat between two striving principles, the inborn life and an intruding foreign nature. But all fell back on life as the first condition of disease. In the old school of Leyden consideration for the first time grew deeper; the proposition emanated from Boerhaave, which his pupil Gaubius placed at the head of his handbook of universal pathology so long in use, the first, in fact, which was written: "Morbus est vita præter naturam." —"Disease itself is life," or more exactly expressed, "it is a part of life."

This conception did away with the unfortunate dualism which so long governed medical science, or, at any rate, it ought to have done away with this dualism between life and disease. If it still did not do so completely, and if more than a century was required to resolve the still continuing dissonance, this lay in the difficulty of finding a satisfactory conception of life. Here, also, the question could not be avoided where life really had its seat. "Ubi sedes vitae?" John Hunter went back to the ancient conception, which the Mosaic formula had already anticipated, "For the life of the flesh is in the blood." Flourens thought he had found the seat of life, the *nœud vital*, in the central nerve-system, in the medulla oblongata. Both one and the other saw themselves obliged for the investigation of this difficult question to perform experiments on living animals. Herewith the experimental method in a stricter sense began to pass into the practice of the pathologists. Vivisection became a regular adjunct to investigation.

It is true the notion that life could only be recognised in the living had long existed. Doubtless it was already developed in ancient times. But the exact time when it was first practically realised can scarcely be accurately determined. Only uncertain legends are extant about it. Zacharias Sylvius, a physician of Rotterdam, who wrote the preface to the Dutch edition of Harvey's "Exercitationes," recalls the story of Democritus, whom the Abderites considered insane when they found him constantly occupied in vivisection; but when the great Hippocrates was called to cure him he, in complete recognition of this occupation, declared that all the Abderites were insane, and only Democritus in his right mind.[5] Probably this story was invented at the expense of the good Abderites, but at any rate it proves that vivisection had long "been in the air." Nor will I venture to decide whether it is true that the teachers of the Alexandrian school really made use of the permission of their king to vivisect criminals. I should only like to deduce from these tales that experiments on criminals must have been practised even at that time. For whoever thinks of the vivisection of human beings must, especially at a time when the anatomy of animals formed the basis of medical study, certainly have previously performed vivisection of animals. In the school of the empiricists which developed out of the Alexandrian, and in which autopsy was for the first time taught as a chief means of knowledge, the experiment appears as a certain demand: in the celebrated formula which has been called the tripod of the empiricists, and which served as a programme of instruction, the expressly arranged experiment is especially mentioned (φυσικὴ ἢ αὐτοσχεδίη ἢ τήρησις), only it is not evident to what extent these attempts were made on living animals. It is therefore useless to examine into the advantage which ancient medical science derived from the vivisections.

In fact, the first great and, therefore, decisive example of successful vivisection known in the history of medical science is that of William Harvey. The establishment of the doctrine of the circulation, which in its main points was experimental, has fundamentally changed the whole direction of medical thought. Had we only this one example, it would suffice to prove clearly the utility—nay, the indispensability—of vivisection. Never yet was a doctrinal opinion more firmly established by the tradition of thousands of years and by every kind of authority, which, indeed, had formed the central point of a powerful and universally acknowledged system, destroyed by so sudden a fall. In complete recognition of the importance of such a man, Albrecht von Haller clearly said that his name was the second in medical science, going back to Hippocrates. But it was a difficult step to come forward with a new and unheard-of doctrine, which

[5] Harveii, Exercit. anat., Roterod. 1671. Præfatio Democritus solertissimus operum natura perscrutator, cum assidue secandis animalibus occuparetur, existimatus fuit insanus ab Abderitis; qui miserati sortem hominis advocarunt Hippocratem, ut illi medicinam faceret mentemque alienatam restitueret. Rogatus decurrit et offendit Democritum animalia secantem, quo spectaculo mirum in modum obiectatus, omnes Abderitas insanire pronuntiavit, solum sapere Democritum.

had such a revolutionary effect on science. Harvey hesitated a long time whether he should publish his discovery, and when he at length carried out his resolve, the great vivisector exclaimed: "Utcumque sit, jam jacta est alea, spes mea in amantium veritatis et doctorum animorum candore sita." The purity of a truth-loving and educated mind is still needed, even at the present day, to absolve Harvey from the reproach of heartlessness, perhaps of brutality, with which our anti-vivisectors are so generous. His new discovery had cost the lives of many animals; it sprang, as he himself says immediately afterwards, "ex vivorum (experiendi causa) dissectione, arteriarum apertione disquisitioneque multimoda."[6] And yet this was the least reproach that was made to him; even kings were at that time so little sensitive—or shall I say, with our opponents, so brutal?—that Charles I. took pleasure in watching the experiments of his court physician.

At the present day—after Malpighi had in the same century proved in the living animal the circulation in the capillaries, and when our own century has added the knowledge of the existence of a real capillary wall—at the present day the doctrine of circulation appears such a matter of course, it has so entirely penetrated into the conception of all, that it would require a particularly trained mind to understand the opinion of the ancient physicians about the local conditions of circulation. Anyone who goes unprepared to the study of the medical classics will fall from one misunderstanding into another. The conceptions of the nature of local processes have been completely changed, and even now circulation, but more it is true that in the capillaries than that in the larger vessels stands almost more in the foreground of pathological interest than it in reality should. The extensive doctrine of inflammation and new formation, within which almost the greater part of practical cases are found, was based upon the experiences concerning capillary circulation; not less the doctrine of the cure of local morbid processes of the most various kinds.

Even the worst opponents of vivisection acknowledge the services rendered by Harvey; only they say that since that time nothing of importance has been achieved by means of vivisection. They do not know that just that domain that includes the vital properties of the organs of circulation was not touched upon in Harvey's experiments on circulation. On what does the activity of the heart rest? What influence do the vessels exercise over the distribution and motion of the blood? What share falls to the arteries, what to the veins, what to the capillaries? All these questions are of the highest practical importance; none of them can be explored thoroughly except by experiments on living creatures. Even Harvey could not grapple with these questions, because in his day histology was not yet developed. Who knew anything concerning heart or vessel nerves? Who had a notion what share of the activity of the heart or vessels belongs to the nerves, and what to the constituents of the coats—i.e., their muscles? An interval of two hundred years had to elapse before Edward Weber, by experimenting on the vagus of the living animal, discovered again in a wholly unexpected and never heard of manner the secret of the innervation of the heart, and before our much-abused friend, Claude Bernard, also showed on the living animal the influence of the sympathetic nerve on the vessels of the head and neck.

Only now, and thanks to innumerable other experiments which were allied to them, do we understand the circulation in all its details. The pulse, this highly prized object of the older symptomatology, can now be interpreted. It is no longer to us the sign of this or that disease, but the sign of the existence or non-existence of special activities of strength or weakness, of irritation or relaxation of certain tissue. Only now can we comprehend in detail the activity of the heart itself, and the influence of certain substances upon it, as, for example, the heart poisons; and it is not only the domain of valve disease to which alone the anti-vivisectors point, because of its incurability, with a scorn that is not easily comprehended, but also the domain of fevers, that of parenchymatous and nervous changes, which we can exactly follow in their symptoms, their nature, and their consequences.

The length of the interval between Harvey and the new experimenters on the innervation of the circulatory organs is explained by the circumstance that during this interval two quite new branches of science had to be created, for both of which the discovery of the circulation was a preliminary condition and an incentive; I mean physiology and general pathology, exactly those two branches which may be regarded as the chief supports of the experimental method, which were at first included under the common name of Institutiones Medicæ. Hermann Boerhaave still combined both chairs, and even united them with that of practical medicine. The division of labour and the formal separation of the branches took place among his pupils. Haller was the real creator of physiology. The tendency of his experiments went first towards fathoming the vital properties of the separate parts of the body, or rather of the separate cells, as we should say now-a-days. Among these properties he placed irritability foremost, following herein the path of the eminent Glisson, a man who it seems to me is not valued enough, even in his fatherland. It would lead me too far if I should attempt in this place to bring forward in detail these memorable investigations, whose comprehension was in those days rendered very difficult by an insufficient adaptation of the terms "irritability" and "contractility." For our purpose it is sufficient to note that here for the first time nerves and muscles, the most highly developed, and therefore most energetic portions of the animal body, were made in their separate activities the subject of minute experiments. Contractility and sensation appear as the actual tokens of living activity. Thus the question of the ultimate form of vital activity was so closely approached that Gaubius, who laid at the same time the foundations of general pathology, simply named vital power as the cause of contraction.[7]

From these beginnings was developed, at first in a very confused and also unfruitful manner, much dimmed by speculative vitalism, the doctrine of life in its modern form. It required long and mostly experimental labours to attain, in spite of much circumlocution, large and practical results. Out of the notion of irritability created by Glisson, that of contractility has been gradually developed, and the opposition in which Haller placed irritability and sensibility has been resolved by regarding contractility and sensibility as two special forms of vital expression allied to different elements, which were subordinated to the general expression of irritability. In this sense irritability and vitality are almost identical. Both are qualities of the cells, and as such directly or indirectly capable of investigation and experiment.

In very truth experiments were thenceforward directed to the cells themselves. The discovery of electric convulsion by Galvani, the labours of Alexander van Humboldt upon the irritated muscle and nerve fibres, and many other contemporaneous investigations, bear witness to the changed tendency in which the new biology worked. More and more the mysticism concerning the spirit of life and disease and speculations concerning a peculiar vital power vanished, and from generation to generation medical science assumed more the character of a true natural science. The darkness that had especially reigned over the nervous system disappeared under the united labours of anatomists and experimentalists, and especially since Charles Bell pointed out the difference of nerves that had till then been regarded as alike, and thus opened the way to the investigation of the particular meaning and properties of the separate divisions of the central nervous system, and one paper after another appeared which shed light upon this important and complicated domain. It is impossible to survey all these papers on this occasion, and it would also be superfluous in an assembly of competent men who have so many of them laboured themselves at this glorious work.

I will only shortly emphasise that among these labours one idea has always appeared more clearly and victoriously, the beginnings of which reach back far into ancient times—viz., the idea of the *individual life* (vita propria) of the single parts. Every new form of experiment which is discovered makes new parts accessible to scientific investigation, and with every step we convince ourselves more clearly that the great, unitary life in the traditional sense is a mere fiction which arose from the observation that in the hierarchical organisation of the human body certain organs attain to so high a development, and with that to such great importance, that they with full reason deserve the name of *vital organs*. And as among those organs again the medulla oblongata possesses the greatest importance, it is easy to understand that the idea could arise that this might be the seat of life. But we now know that life is the sum of the joint action of all parts of the higher or vital ones as of

[6] Harvey, l.c., p. 81.

[7] Gaubius, Institut. Path. Med., p. 71. Vis vitalis solidi est, qua illud ad contractum irritamenti se contrahit.

the lower or inferior, and that there is no *one* seat of life, but that every truly elementary part, especially every cell, is a seat of life. In biological investigation, as well as in pathological, we have come to a multiplication of centres. Obviously the number of the vital centres is far greater than that of disease centres can ever become; and therefore disease and life, or to speak more exactly, diseased and healthy life, quite well exist side by side in the same organism, but in such a manner, it is true, that disease signifies a diminution of the healthy life. In this examination we have again found the essence of disease, a lessening of which had so long disappeared from view, not, it is true, in spiritualistic form, but as a material *ens*, a real corporeal thing —the altered cell.

Now, has all this been of use? Was it worth while for this to give pain to so many animals? to kill so many animals? Have we a real right to demand that the experimental method should continue to be allowed? We may confidently answer all these questions in the affirmative. Not every experiment on animals has had such great consequences as that of Galvani—consequences which have not only brought about a new and efficacious method for the treatment of diseases, electro-therapeutics, not merely revealed a large new field of vital processes, but have also supplied the first condition for an endless number of the most important technical arrangements, the knowledge of natural processes. But galvanism might also serve as a clear and consoling example, to show that not every result of true observation of Nature need immediately appear in its practical signification, and that it may yet be of the highest practical value. The cellular theory and the discovery of the *vita propria s. cellularis* are of themselves very abstruse things, and without a further comprehension no sick person can be treated by them. And yet they have become the basis, even to a certain extent the guarantee, of localising therapeutics; they will certainly become this more from day to day, as soon as materia medica has to a greater extent gone on that path which toxicology has for some time so successfully pursued.

How then can we expect any great results for the art of healing if we cut off the experiments on animals? For a long time no drug has received quicker recognition and wider application than chloral, the effects of which were discovered and established in my laboratory by Mr. O. Liebriech, by experimental means. How would it have been possible to learn to know these effects without experiments on animals? The friends of the animals say to us: "Try the new remedies on yourselves." They refer us to the medical provings of the homœopaths. But even disregarding the fact that the medical provings of the homœopaths have not discovered a single new remedy which could be distantly compared with chloral; and that these proofs, even in regard to the remedies already known, do not even satisfy the most modest demands of a scientific investigation, that they, therefore, may not be set up as models; yet no one could seriously demand that very different, possibly poisonous bodies, should become the object of physicians' experiments on themselves or on human beings at all. The kind of morality which forbids experiments on animals and advises the attempt on one's own body or on a sick person lacks, in fact, the first basis of a reasonable observation.

The reference also to the great importance of hygiene and prophylaxis is tolerably superfluous. If any class of men were ever active in this direction, certainly physicians have been. Never have there been wanting among them eager hygienists; and whenever there is a great problem of prophylaxis to solve, we may confidently expect to find medical men at work. We are so much accustomed to this obligation that we indeed regard hygiene and prophylaxis as belonging to medical science, and to no other. But it is empty talk to say that prophylaxis makes therapeutics and to some extent medicine superfluous. The constitution of this imperfect world is of such a nature that there will certainly be no lack of invalids as long as there are men, and we are not afraid of the threat that we shall be no longer needed. We are essential to the development of hygiene, nor can the experiments on animals be dispensed with; or are the hygienists also to be condemned to try the effect on their own persons of the various "causes," cold and heat, dryness and damp, dust and harmful gases, micrococci and bacteria, and by these experiments on their own persons to establish the laws of the same, and to formulate laws? Sensible governments will understand that it would be absurd to sacrifice human life only because it occurs to a small number of people that it is immoral to sacrifice animal life. In epidemics of all kinds, in their work in hospitals, in the country, in nightly visits to invalids, in operations and dissections, medical men are already more exposed than any other class of the society, and all the blindness of the animal-fanatics is required to demand of them in addition that they should test on their own bodies the healing or poisonous or indifferent effects of unknown substances, or establish the strength of doses permissible by observations on themselves.

In the name of humanity, of morality, of religion, the suppression of experiments on animals is demanded; for in reality it is not merely a matter of vivisection but of experiments on animals—i.e., the experimental method itself. When vivisection is spoken of, all other painful effects in which no cutting takes place are also meant; and in order to prevent any misunderstanding, not only physiological, but also pathological and pharmacological experiments are attacked. *The criterion is the pain. All pain which is caused an animal by way of an experiment is* (say they) *cruelty to animals*, and therefore immoral and contrary to religion. With this definition of cruelty to animals, if applied to other professions or people, we might arrive at strange conclusions. Lovers of dogs, who in the training of their dogs often make use of torturing methods and painful punishments, would easily be in danger. The training of horses for certain purposes would have to be entirely abandoned. A great number of our domestic animals would have to be left untrained, so that they might be spared pain. We might perhaps get into the condition caused in Turkey by the wild dogs.

Some anti-vivisectionists are at any rate logical enough to desire the slaughter of animals to be also forbidden. From a vegetarian point of view the opposition gains a sort of appearance of system. Thus von Seefeld[8] demands at the same time vegetable diet and the forbidding of vivisection; but since he "as vegetarian" has no need of meat, he is very much inclined to grant still further concessions. Thus he condemns hunting for the purposes of pleasure, but thinks it cannot quite be done away with for purposes of defence. Others go still further, and even denounce war. With these gentlemen it might be possible to speak, only it would be important to come to an agreement about principles.

As a matter of principle it can scarcely be denied that *killing is more than torturing*. Scarcely could a criminal code be found which would punish the wilful murder of a man less than cruelty to a man. Not without reason is it assumed that a man who, after any ill-treatment whatever, remains alive can recover and once more attain a full or complete enjoyment of life; mitigating circumstances are recognised, even in murder and assassination, but on principle this extremest injury which is done to a man is always and everywhere punished most severely.

On the other hand, the anti-vivisectionist regard torture of animals as worse than killing them. Although they blame every torturing or painful kind of death, even of cattle, yet they have not the slightest scruple to cause even highly-organised animals to be slaughtered or killed, not only for food, but also for other purely subjective reasons. They even go so far as to demand that an animal which survives an experiment should be killed, although it might possibly still enjoy a long and happy life. Is there any logic in this, or any morality? What? we may have the right to kill an animal for some ordinary purpose of utility, in order to eat its flesh, to sell its skin, to pound its bones for manure for the field, and we may not have the right to subject it to a scientific experiment, which we undertake for purely theoretical reasons, or for reasons of public welfare, by which we ourselves are in danger of being injured? It will scarcely be assumed that we would undertake experiments with glanders and charbon for pleasure or amusement, or indeed without knowledge of the great danger of infection. Whoever acknowledges that he has the right to kill animals has no right to forbid physicians to vivisect animals for the purposes of investigation, or to subject them to painful influences of other kinds.

Obviously we cannot demand that the abuse of this right should not be punished. For it is only with this abuse, and not with the causing of pain, that cruelty to animals itself really begins. If all production of pain were alone cruelty to animals, the veterinary surgeon ought also to be punished for operating on a diseased animal in order to cure it. There is

[8] Alfred v. Seefeld, Altes und Neues über die vegetarianische Lebensweise. Hannover, 1880, p. 33.

punishable cruelty to animals, when pain is caused to an animal needlessly and aimlessly. Therefore we cannot object to placing every experimenter under supervision, but certainly not under a society for the protection of animals. Whoever takes more interest in domestic animals than in science—i.e., the discovery of truth cannot be a fit agent of control for scientific action. To what might it lead if an experimenter who commences his experiment in good faith had to be responsible, even during the experiment, to a layman, or after the experiment to the judge, for not having chosen another method, or other instruments, or indeed some other experiment?

No, this is not a question of objective right. As long as every owner of animals has full liberty at any time, according to his own judgment, at any rate for purely practical reasons, to kill his own animals, be they wild or tame ones, so long must we allow that experiments may be made on living animals for scientific purposes, and from purely theoretical reasons. Of course, it is only the investigator himself who can decide about the necessity of such experiments; he may be forced to come to an agreement with the court of supervision about the choice of place, time, and admission of strangers. But the management of the experiment must remain in his hands. It is thus that we understand the concession of the liberty of science.

What is opposed to us is the indignant feeling of the proprietors of horses, dogs, and cats, who are excited at the idea that something similar may happen to their own beloved animals as to those of the institutes of learning. We can feel with them there. Nor do we wish to force anyone to surrender his pets to us, nor will we steal them from him. If either of these things happened, it is probable that in every country the intervention of the judge would be successfully appealed to against the offender. But we demand that we should not be restricted in our disposition over the life and keeping of those animals which are rightfully in our possession, and that we should not be regarded, or even denounced, *à priori* as brutal barbarians, without moral feeling, standing almost on the threshold of crime. There is nowhere any proof that morality is diminished in medical circles at the present day. The reproach that Christianity is endangered by vivisection is worthy of Abdera. The statement that medical students are inwardly "brutalised" is just as fanciful as it is a calumny that the teachers of vivisection have suffered any loss of morality. But least of all is there any need to fear for science itself. That holds of science which Bacon says of the sun: "Palatia et cloacas ingreditur, neque tamen polluitur."[9]

SECTION II.—PHYSIOLOGY.

ADDRESS

BY

PROFESSOR MICHAEL FOSTER, F.R.S.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—In seeking some words with which to welcome from this chair my brother physiologists to their part in this gathering of the medicine men of all nations, my choice has fallen on the story of the share which the country in which we have this year assembled has taken in the past in building up our science of physiology. Such a step might seem to savour of national egotism were the end which I had in view that of magnifying the labours of British physiologists, but our meeting here to-day is in itself a proof that the true worker, wherever he may happen to draw his breath, belongs to all lands; and in attempting to recall to your minds to-day the services of those who laboured in the past in Great Britain, I trust I shall appear in the eyes of our foreign guests merely as a cicerone striving to render a visit the more interesting by weaving connexions between the present and the past.

At the head, both in chronological order and in point of worth, of the roll of British physiologists comes a name concerning which I may begin and at the same time end by simply naming it. It would ill become me to waste your time by attempting to tell the more than twice-told tale of William Harvey. May I not simply say that his renown is a statue of solid real metal, which the blows directed against it from time to time in the present, as in the past, have not so much as dented or tarnished but simply polished and made bright?

In any country the giving birth to a great man may be followed by two opposite effects. On the one hand, his example and influence may stir up his fellows to increased activity; on the other hand, the making of him, like powerful tetanus in a muscle, seems often to lead to national fatigue, and the land which bore him appears for a while unable to produce his like. This, indeed, would appear to be Nature's method of making science truly international. In her series of great men she continually changes the *venue* from land to land. As in calling forth Harvey to succeed Vesalius she shifted the scene from Italy, where the latter at least did his chief work, to England, where the former lived and laboured; so, to find the next truly great man after Harvey, we must cross the Channel and pass to France, to Italy, to Leyden, or to Berne, according to the views we hold as to exactly on whose shoulders the mantle of Harvey fell.

Happily in England the national exhaustion was not so great but that Harvey's direct influence was manifest in his being succeeded, not so much, as might be expected, by feeble imitators and still more feeble cavillers, as by men who, if not of the first rank, were yet of notable worth, and by their sound work showed themselves worthy to follow in his footsteps. For in the years which followed immediately after Harvey, the anatomical and physiological mind of England was by no means idle. During the middle and latter thirds of the seventeenth century there were several centres of scientific activity, in more or less close union. First and foremost was the Society which, beginning with modest beginnings, has waxed in strength and usefulness as years have rolled on, and which for this long while has been the large-minded nurse of British science—I mean the Royal Society. Closely connected with this mother Society, and, indeed, in genetic relation with it, was a gathering of earnest, active men, whose home was the University of Oxford. Nor was the sister University of Cambridge at that time wholly idle; more strictly professional in activity, but none the less zealous in the promotion of real science, was the College of Physicians of London. Lastly, but not least, it was a feature especially of the latter part of the time of which I am speaking that, in spite of the difficulties of locomotion, a large number of men scattered all over the country were active members of the republic of science, in continual communication with each other, and with the centres of which I have just spoken. Physicians resident in country towns, enlightened surgeons and apothecaries, and educated gentlemen of leisure, many of these sought recreation in the pursuit of knowledge, and their contributions to science, sometimes of no little value, may be found in the Philosophical Transactions or other publications.

Among the men, after Harvey (belonging to these several centres) who added to physiological science, I might mention first Francis Glisson; whose name has been handed down to us in "Glisson's capsule," and whose chief work, "Anatomia Hepatis," was published in 1654, a quarter of a century after Harvey's great work. Appointed Regius Professor of Physics in the University of Cambridge in 1636, almost immediately after taking his medical degree, he appears to have practised at Cambridge and Colchester, but from 1650 onwards, to his death at eighty-one years of age in 1677, to have lived chiefly in London. His reputation during his life and after his death was very great, his works passing through several editions, and deservedly so, for no one can read his writings without feeling that he was a strong man of great knowledge, with a clear head and logical mind. Unfortunately he was greatly enamoured of dialectic formalities. He begins his work on the liver with a prolix discussion on anatomy in general, and he has so written his other great work, "De Ventriculo et Intestinis," that his views are largely unintelligible, unless the reader have first waded through an elaborate treatise, "De Vita Naturæ." Yet whoever has courage to disinter the truths which Glisson has to tell from the definitions and syllogisms, and long-winded verbal discussions in which they are buried, will, I think, be willing to admit that, apart from the

[9] Bacon, l.c., p. 128 (I. 120).

more strictly anatomical credit which is due to his careful descriptions of the liver and alimentary canal, he deserves mention for having laid hold of an important physiological idea. Not only was he, so far as I know, the first to introduce that phrase irritability, which in Haller's hands was made to teach so much, and which is now one of our household words, but in the chapter where he is treating of the fibres of the stomach and intestines, he shows that he had grasped the important truth of independent muscular irritability. "From these instances," says he, "it is sufficiently clear that fibres [muscles] can, without any aid of the senses, perceive an irritation, and conformably move themselves." He, moreover, clearly distinguished between contraction and relaxation, and by means of an experiment which is almost the exact antitype of the modern plethysmograph, he satisfied himself that the arm does not increase, but rather decreases in bulk, when its muscles are even violently contracted, and concludes "that the fibres shorten themselves by their own vital movement, and have no need at all of any copious afflux of spirits, whether animal or vital, by which they are inflated in order that they may be shortened."

But these were views put forward by an old man of eighty with one foot in the grave. Had they come to him in his early life, when the enthusiasm of youth would have permitted him to preach and push them, the doctrine of muscular power might have been saved the waste of near a hundred years.

Leaving on one side Glisson's contemporary, Wharton, of anatomical rather than physiological worth, as well as some others, let me pass from the University of Cambridge to that of Oxford, which a company of able, zealous men, in part founders of the Royal Society, were making a centre of scientific activity.

Conspicuous in this company was the brilliant Thomas Willis, who in 1660 was appointed Sedleian Professor of Natural Philosophy, but who in 1666 moved to London, where, till his death in 1675, he was busily engaged in a successful and lucrative practice.

The great reputation which Willis achieved in his own time, leaving on one side his purely medical works, rested on a basis partly anatomical, partly physiological. In the first place, in his work "Cerebri Anatome" he gave a more complete account than had yet appeared of the anatomy of the brain and cranial nerves; an account, moreover, embodying many new discoveries. In the second place, he was bold enough to develop a physiological and psychological theory of the functions of the whole nervous system.

The value of the anatomical work is undoubted. The phrases circulus Willisii and nervus accessorius Willisii, which are still current words among us, give but slight hints of the many contributions to our knowledge of the anatomy of the brain and cranial nerves which the world owes to Willis's works. But there would seem to be a sort of contradiction between the nature of this part of his work and the character of the man himself. Report speaks of Thomas Willis as a man of versatile parts, of a nature averse to patient anatomical investigation. He himself states that in many of the details of his work he was largely assisted by a man of a very different stamp, the patient, careful, clear-headed Richard Lower (of whom I have presently to speak); and ill-natured critics of the time insisted that the many anatomical discoveries disclosed in Willis's name came in reality from the hand and mind of Lower. It is not worth our while to attempt to sift this question now; all the more so since both Willis's acknowledgment of Lower's help was free and ungrudging, and Lower, so far as I know, never took occasion publicly to reproach the master whom he evidently so much loved. But this may be observed, that the theories of Willis have not, like his anatomy, stood the test of time. His descriptions of the brain and nerves, with the additions and corrections of Vieussens, who followed him a little latter in the same century, served as the basis of teaching till recent times (indeed, Charles Bell speaks of the system of Willis as being current in his day). But his guesses as to the functions of the parts of the brain proved no solid addition to knowledge, and his theory of the *anima brutorum* pervading the whole of the bodies of all animals, though it may be interpreted as foreshadowing the modern doctrine of the life of the tissues, was unable to make way against the gathering force of the mechanical doctrines of the Cartesian philosophy. Willis, in fact, as many have done before and since, grappled with a subject too big for him, and attempted to solve problems for whose solution the world was not yet ripe. Yet the talent of the man is seen even in his failure. He appears to have laid hold of the idea of reflex action, and if anyone is inclined to smile when he learns that Willis thought the cerebellum was the seat of involuntary, as the cerebrum of voluntary actions, he will do well to read the author's guesses as to the functions of the corpora quadrigemina, corpora striata, corpus callosum, cerebral convolutions, and the like; for he will find that these are not so far unlike other guesses about the same things which have been published in the journals of our own time.

The next two names which I have to mention illustrate a feature peculiar almost to England. In the rest of the learned world progress in science is for the most part distinctly professional; discoveries are made by members of the professoriate. In England it is a matter of notoriety that some of the most important steps have been due not to accredited professors but to free lances in science; to men of business, lawyers, clergymen, and men of fortune. I have spoken of Glisson, the professor at Cambridge, and of Willis, the professor at Oxford, but after them the University Professoriate, as far as physiology is concerned, became dumb. If you read the roll of the regius and other professors in the old universities you will find merely a long list of men, respectable it may be in their way, but whose names are unknown to physiological science. This feature, which appears so strange to men of other lands, is partly due to the anomaly that the great metropolitan heart of England, London, never had a university, and, indeed, till quite recently, was without even the beginning of one. Hence arose a divorce between metropolitan activity and the old established seats of learning. From its very beginning the Royal Society—the Invisible College as Boyle called it—has performed the higher functions of a university, and the very essence of the life of that body always has been that it gathers into its fold all manner of folk, demanding only that they shall have the desire and the power to advance knowledge.

At all events, whatever be the cause, the next contributions brought by England to physiological science came through hands not professorial, not even medical.

The great work of Harvey remained incomplete by reason of the lack of true ideas as to the uses of the lungs. A clear conception of the nutritive mechanism of the body, of which Harvey's discovery was the keystone, was still impossible so long as men, even though they had given up the idea of cardiac refrigeration, continued shackled with the view that the mere mechanical movement of the lungs was the be all and end all of the respiratory act. Although the great Vesalius, in one of those passages which make us feel how near the father of modern anatomy came to being also the father of modern physiology, shows that he once at least was drawing near to the truth, though many afterwards similarly touched the coast, although Van Helmont, by his discovery that gas silvestre or carbonic anhydride rendered respiration fruitless, formally began the chemical theory of respiration. I may, I think, venture to assert, without fear of being reproached with national vanity, that it was reserved for a group of Englishmen all more or less contemporaries, all more or less friends, two only of whom were doctors, and none of whom were professors, to lay the first foundation of our real knowledge concerning the nature of breathing. I do not neglect the importance of the anatomical labours of the great Malpighi, whose work on the lungs was published about the same time (1661), nor do I forget that a little later (1680) the clear logical mind of Borelli led him in this, as in so many other vexed questions of the animal economy, far into the truth; but the latter had the advantage of already knowing what had been done by the men of whom I speak.

Concerning one of these, Robert Boyle, the sagacious natural philosopher (who, though for a while he took up his abode at Oxford, was not bred at that university), who was for so long one of the pillars of the Royal Society, who busied himself with anatomy only in so far as he busied himself with all parts of natural knowledge, who touched nothing which he did not throw light on; to whom even more than to any of his fellows must be given the credit of having established, by experiment itself, the pre-eminence of what we know as the Experimental Method, whose name is praised even if his works be not read by all men, I need say little here. It will be enough if I remind you that his simple experiments showing that air, and fresh air, was necessary for the respiration and life of aquatic as well as of terrestrial animals, that the respiratory value of air varied according as it was rarefied by the vacuum Boylianum or condensed by pressure, and that air already breathed became

unfit for further respiratory use, mark the point at which the older view, that the chief use of the respiratory movements was to favour the circulation of the blood, began to be recognised as clearly untenable.

Tending even more strongly in the same direction was the classic experiment of Robert Hook, who, in his early days the assistant first of Willis and then of Boyle, afterwards curator and experimenter, and subsequently Secretary to the Royal Society, was for many years a prime mover in English science. Mathematician, physicist, chemist, engineer, microscopist, physiologist, virtuoso, and city surveyor, some might perhaps be tempted to call him Jack-of-all-trades and master of none; yet he was a man of almost unbounded fertility and vast energy. We may forgive him his unlucky opposition to Newton, and overlook both the petulant quarrelsomeness which engaged him in conflict with nearly all his friends in turn, and the miserly niggardliness which after leading him during his life into perpetual squabbles over a few pounds, left him at his death with much riches stored up—when we call to mind his many and varied contributions to science. In 1662 he was appointed Curator to the Royal Society at a salary of £50 a year on the understanding that he should "furnish the Society every day they meete with three or four considerable experiments," and for many years he was always ready with "considerable experiments;" of one kind or another, sometimes mechanical, sometimes physical, sometimes physiological.

For it was a feature of the Royal Society at that time that the Fellows thought much of seeing with their own eyes the "considerable experiments" which were brought before them to serve as a basis for new scientific views; they were not then content with hearing an account, still less with hearing an abstract of an account, of experiments performed elsewhere. A no less striking feature of the Society was the catholic feeling of all the Fellows towards all branches of learning. Each one was interested in results gained on other lines of research than his own, and differentiation of study had not yet proceeded so far as to prevent each one from appreciating the labours of all the rest. Not the medical Fellows alone, but nearly all of them, were concerned in the progress of physiological inquiry, took part in physiological discussions, and witnessed physiological experiments. When "an anatomy" from the gallows at Tyburn had been obtained, a circular was despatched to the Fellows stating when and where and by whom the dissection would be performed; and the Society's bills contained items for animals to be experimented on. These men, who in various branches were making the Society looked up to throughout the world as the centre of the new philosophy, had no doubt whatever that the true knowledge of life and disease was henceforward to be won by careful repeated experiments. They had not yet learnt that it was wrong to kill an animal in pursuit of truth, though right to kill it for the sake of food or in pursuit of sport; and were their irascible curator to revisit to-day the scenes of his former labours, great, I imagine, would be his indignation and scathing his words when he learnt that his philosophical experiments had been made penal by Act of Parliament—by an Act of Parliament the passing of which, and indeed the passing of some of the harsher clauses of which had been the work of men who actually bore the title of Fellows of his old Society.

Of the many "considerable" physiological experiments which Hook performed before the Society I will content myself with reminding you of one, and only one. Years before Vesalius had performed artificial respiration, and traced its effects on the movements of the heart and the blood; but Hook did something more than merely repeat Vesalius's experiment. He showed, by an ingenious experiment—viz., by keeping the lungs distended with a brisk current of air passing through them, that the central fact of respiration was the effect of the air on the blood, and not the movement of the lungs—a demonstration which I venture to regard as a cardinal fact in the history of respiration. Only a knowledge of the chemistry of the blood-changes was necessary to make the theory of breathing approximately complete. And that also was, though imperfectly, supplied by the labours of two other Englishmen, Hook's contemporaries—Richard Lower and John Majow.

To Lower I have already referred in speaking of Thomas Willis. At first the pupil, afterwards the coadjutor, and during their lifetimes the attached personal friend of that brilliant physician, Lower was a man of very different mould. Patient, unassuming, industrious, clear-headed, fertile in ideas and methods, and yet withal accurate and exact, he had in him all the making of a great man of science. Had he remained in the academic repose of Oxford, devoted, without distractions, to his researches, it is difficult to say whither he might not have reached. Unhappily, Willis persuaded him to move with him to London, where, especially after his master's death, his talents soon gained him an extensive practice. He became the most noted physician in London and Westminster. "No man's name was more cried up at court than his," and the powers of mind which might have made him a second Harvey, were used for the immediate benefit of his patients and himself.

Of even such work as he did, we cannot take the full measure, since it is now impossible to unravel out his share in the work which is ascribed to Willis, but his independent volume, the "Tractatus de Corde" (1669), shows the metal of the man. As a piece of careful anatomical work, made alive with physiological suggestions, it may even at the present day be read, not only with pleasure but with profit. And the story of the transfusion of blood, which at the time made so great a stir, shows at least how skilful an experimenter he was. When the decayed clergyman, Arthur Coga, for the reward of a guinea allowed Lower and King to inject into his veins through silver pipes and common quills, ten ounces of blood from a sheep, he showed a confidence in the operators greater than which could not be given to the modern master of experimental physiology, Carl Ludwig, with all the ingenious safeguards now at his command.) When, however, we strive to appreciate the genetic and historic moment of Lower's work, we must, I think, admit that his chief contribution to physiology was certainly not the transfusion of blood, not the aid he gave to Willis, not even his careful cardiac anatomy, with its physiological deductions, but the notable, well-directed experiments by which he demonstrated, once for all, that the change of colour from venous to arterial blood was due not to any fermentation in the heart, not to the extinction of the claret hue by the action of the veins, but simply and solely to the passage of air through the pulmonary walls, and its admixture, or, as we should say now, its absorption, by the blood; that the change in the lungs was identical with that which takes place when the surface of a venous clot becomes florid by exposure to the air. "How much they err," says he, "who deny altogether this commerce of the air with the blood. For without it it would be possible for one to live as wholesomely in the foul atmosphere of a prison as in the midst of pleasant groves; for wherever fire can fitly burn, there we too can fitly breathe." I take it that if we try to throw ourselves back into the ideas of the times of which I am speaking, this clear experimental proof of the essential fact of respiration must appear to us an epoch-making step. One thing was lacking in Lower's exposition; he did not appear to have recognised the true nature of the converse change from arterial to venous blood; the process of tissue oxidation was unknown to him. He speaks of the air as escaping from the blood in its passage through the tissues, and transpiring through the pores of the body. At least he leaves us uncertain as what he thought was the exact function of the air thus gained and lost by the blood. In the very same year, however, in which Lower's tractatus appeared there was published a little work in which the world had a glimpse of the true meaning of that mysterious changes from purple to scarlet and scarlet to purple, the full understanding of which had to be deferred for near a hundred years.

Among Lower's friends and contemporaries at Oxford was one John Mayow, of whom it may be said that the more one reads of what he wrote the more one is astonished at his penetrative intellect. Striking out for himself a new path, his meditations led him in a way to forestall the discoveries which made resplendent the latter half and closing years of the next century. I believe all those who have read with care Mayow's treatises "De Sal Nitro et Spiritu Nitro-aereo" and "De Respiratione," have become convinced that under cover of the phrase "spiritus nitro-aereus" he laid his hand, so to speak, on that mysterious element which nearly a hundred years later Priestley and Lavoisier taught us to call oxygen; nay more, that he had formed, if not a wholly clear, yet at all events an approximately correct conception of the part which this great agent plays not only in the special pulmonary respiration, but in the life of all the tissues. He saw that it was this nitro-aerial constituent of the atmosphere, and not the whole body of air, which passed into the

blood in the lungs, and that hence this constituent was deficient in the expired breath. He saw, moreover, that the change from arterial to venous blood in the tissues was due to the same nitro-aerial spirit escaping from the blood and mingling with the elements of the flesh, he even saw that the energy of the living machine was the issue of the struggle between the same spirit and the sulphurous particles of the body, or, as we say now, was set free in the oxidation of the combustible elements of the tissue. In reading an old author writing in distant times we are apt to fall into one or other of two errors; on the one hand, the strangeness of his terminology may lead us to overlook the truth and correctness of his ideas; on the other hand, we are equally apt to read into his old words conceptions wholly of our own time. Making every allowance for the latter source of error it would, I venture to think, still be found that Mayow's work translated into modern phrases would represent with wonderful nearness those views of respiration on which we pride ourselves to-day.

"Vir ingeniosus neque mathematicam ignosus," says Haller, in speaking of Mayow, and a perusal of the little tract, "De Motu Musculari," will, I imagine, convince the reader that while Mayow went far beyond Borelli in comprehending the chemical basis of muscular contraction, he anticipated in part the mechanical interpretations of muscular action for which the great Italian mathematician justly became celebrated.

Nearly the whole indeed of the little which John Mayow wrote is marked with accurate observation, experimental acumen, and original conceptions. Had he lived like the great Haller himself, to a ripe old age, one page of the history of physiology might have been very different from what it is. "Juvenis," to quote Haller again, "in hypotheses pronior." He was not spared to work out the many hypotheses which were seething in his brain. Carried off at the early age of thirty-three, his name not yet inscribed in the roll of the College of Physicians, the world had to wait many years till other minds took up his broken work.

Did time and opportunity permit much more might be said, possibly not without profit, concerning these men, at whose lives and works I have thus rapidly glanced, and indeed, concerning others whom I have not so much as mentioned; but I trust I have already said enough to show that at a time when physiologists were far from abundant on the Continent, when the chief physiological impulses there were coming from the philosopher Descartes, the anatomist Malpighi, and the mathematician Borelli, when the greater European names in biology (Stenon, Bellini, Graaf, Redi, Ruysch, Swammerdam, Leeuwenhoek, Vieussens, and others) were those of anatomists, naturalists, or physicians rather than physiologists, pure experimental physiology was being pursued with diligence and success in England. But with the departure of this group of men, the *venue* of our science was once more changed. I have already said that after Glisson the University of Cambridge in matters physiological became dumb. So also with Willis, and Lower, Boyle, and Mayow, the book of Oxford physiology was closed. Not only so, but for a while the whole of England became as far as our subject is concerned sterile. She produced naturalists like Grew and Lister, she gave birth to successful, indeed distinguished physicians, and to some worthy anatomists, but the Institutes of Medicine were for a while neglected.

The school of mathematical physiologists, who, incited by the example of Borelli and the influence of Newton, fancied that the calculus alone could solve the mysteries of the living body, made a stir in their day, without really advancing our science, and the works of the versatile Jacobite Pitcairne, of Keil, and Jurin are justly forgotten. A little later on the first Monro began the long series of Scottish celebrities; but he was an anatomist rather than a physiologist. Indeed, in the early part of the eighteenth century the centre of physiological activity was at Leyden, where the brilliant, fascinating Boerhaave was making a school of world-wide reputation.

Boerhaave passed away, and Haller became his intellectual successor. The eighteenth century ran more than half its course with scarcely a sign of physiological activity in England save one. And this came not from the older Universities, for they, leaving their old catholic sympathies, were wrapping themselves in narrower studies, not from the wigged leaders of the College of Physicians, for they were wasting time and talents in fruitless discussions of the doctrines of the schools, not indeed from the profession at all, but, after a truly English fashion, from the sister calling of religion.

As you pass up the Thames from London towards Oxford you come, a little beyond Richmond, to the first obstruction to navigation, in the shape of Teddington locks. In the early part of the eighteenth century the minister of the adjoining hamlet of Teddington was the Reverend Stephen Hales, also rector of Farringdon in Hampshire, a man of varied accomplishment, of great practical ingenuity, and a master in the art of experimental investigation. Early fascinated with the mysteries, which fascinate so many of us even to-day, of muscular contraction, dissatisfied with current interpretations, as well as with the calculations of Borelli and the succeeding school of iatro-mathematicians, he turned his attention seriously to physiological experiments. In his statical essays, which received the "Imprimatur" of the Royal Society, the first volume in 1726–27, the second in 1732–3, after relating researches into vegetable statics, the movement of sap, &c., which, though of prime importance in vegetable physiology, need not detain us here, he proceeds to relate his experiments on the pressure of blood in the arteries and veins of horses, sheep, and dogs. Save that his methods were somewhat rough, that he measured pressure, not by a mercury manometer, though strangely enough he employed this in determining the force of inspiration and expiration, but by the height of the column of blood itself, that with characteristic ingenuity he used as a flexible tube to connect the cannula with his manometer, the actual trachea of a goose, instead of that rigid, and yet flexible artificial trachea which we now-a-days construct out of caoutchouc and rings of glass, his research is a piece of quite modern work, the prototype and original of those valuable memoirs on vascular dynamics which have appeared from time to time from the laboratory at Leipzig.

I do not think I am exaggerating matters when I affirm that next to Harvey's discovery a correct appreciation of blood-pressure is the keystone to the physiology of the vascular system, and indirectly of the rest of physiology, and of pathology as well. Pull out from the web of our system of physiology the strand marked blood-pressure, you pull out also all that is suggested by the phrase vaso-motor, and leave the rest of the fabric a confused and tangled heap. If so, then how much is due to Stephen Hales, for he surely first opened the way in this weighty matter. In strong contrast with the labours of Keil, Jurin, and others of the iatro-mathematic class is his work. They, like some other mathematicians, fascinated with the very operations of their calculus, were content with such data as were at hand, and often, indeed, careless about them. In consequence, their labours were sterile. To Stephen Hales the living organism was not simply a pretty field for mathematical exercises, but a crowd of problems to be solved first by diligent observation, and then, and then only, by calculation. He was an experimental philosopher in the truest sense of the word. As you read his works you feel that the experiments were not made, as experiments sometimes are, for the sake of the experiment, but simply that he might push further into the secrets of Nature. His reflections and deductions are as weighty as his operations were ingenious. There is one passage in particular where he is descanting on the great variation of blood-pressure, not only in different kinds of animals, but in the same kind, and in the same individual at divers times, and under differing circumstances, in which he says (p. 31, 3rd ed.), "Even in the same animal the force of the blood is continually varying according to many circumstances; for the healthy state of animals is not confined to the scanty limits of one determinate degree of vital vigour in the blood; but the all-wise Framer of these admirable machines has so ordered it as that their healthy state shall not be disturbed by every little variation of this force, but has made it consistent with a very considerable latitude in the variation of it." Does not this sentence clearly show that Hales had completely freed himself from the animistic doctrines to which so many of his predecessors, and indeed contemporaries, were attached, and how far, on the other hand, he had pushed beyond the Cartesian ideas of a mechanism worked by a central force, and how fully he had entered into those conceptions of the animal body as an exquisitely adapted, self-regulating machine, which we prize, and justly prize, as our leading views of to-day. As a clergyman, and therefore not brought up to a familiarity with the dissecting-knife and the operation-room, he was naturally averse to anatomical procedures. As a man

of kindly humane nature, indeed as one of England's earliest and best philanthropists, he felt a repugnance—as indeed who does not?—to dabbling in the blood of living animals. "The disagreeableness of the work," he says, "did long discourage me from engaging in it; but I was, on the other hand, spurred on by the hopes that we might thereby get some further insight into the animal economy." And further insight he did get, as, indeed, every one must get who works in Hales' spirit. No doubt ever crossed his mind as to the beneficial character of his labours, and I take it that could we now question him as to how he thought he had best served mankind, he would answer that it was not so much by his having been the chief means of introducing ventilation into our then wretched English gaols, though he invented a ventilator for the purpose—great as has been the suffering thus saved—not so much by any of his many other similar practical inventions, as by the indirect results of his hydraulic and other theoretic researches.

Hales' essays are indeed even to-day a mine of delightful observations and reflections. He not only exactly measured the amount of blood-pressure under varying circumstances, the capacity of the heart, the diameter of bloodvessels, and the like, and from his several data made his calculation and drew his conclusions; by an ingenious method he measured the rate of flow of blood in the capillaries in the abdominal muscles and lungs of a frog. He knew how to keep blood fluid with saline solutions, got a clear insight into the nature of secretion, studied the form of muscles at rest and contraction, and speculated that we now call a nervous impulse, but which was then spoken of as the animal spirits, might possibly be an electric change. And though he accepted the current view that the heat of the body was produced by the friction of the blood in the capillaries, he was not wholly content with this, but speaks of the mutually vibrating action of solids and fluids as an independent cause of animal heat, in a way which makes us feel that had the chemistry of the time been as advanced as were the physics, many weary years of error and ignorance might have been saved our science.

Stephen Hales was a clergyman, and though his works found acceptance with the medical profession and with the general learned public, he had in England no successor. While abroad Haller was making a name and founding a school, Great Britain was for the most part silent. Save from some little activity north of the Tweed, where the second Monro succeeded his father, for some scattered memoirs in the Edinburgh Medical Essays, notably one by Stevenson, on Animal Heat, and for the elaborate work of the ingenious but misdirected Robert Whytt, little or nothing was doing in this country. The chemist Black, at Edinburgh, moved on the theory of respiration a step by demonstrating the presence of carbonic acid in expired air, but further discoveries yet to come were necessary to make the value of that step apparent.

The next physiological light was to come from a body which had hitherto had little opportunity of contributing to science. In the eighteenth century the barber surgeons rose in power and influence as they became simply surgeons. And while the professoriate of England had wholly and the doctorate largely deserted the path of physiological and experimental inquiry, the genius of a surgeon, in spite of the difficulties of an imperfect education, was drawing directly from Nature the inspiration of new physiological ideas. For I venture to think I am right in claiming John Hunter as physiological rather than anatomical in the bent of his mind. True he busied himself, as we all know, with structures rather than with apparatus, with dissections much more than with experiments, but in reality he cared little for morphology, for the laws of animal form. He sought to know the details of animal structure, because he thought to learn from them the secrets of animal function, his guiding idea in amassing what has since become the great Hunterian Museum, being that the parts of animals should speak for themselves as to their use and work.

So much from nearly every point of view has been so often said of John Hunter that I will to-day content myself with dwelling a moment on what, especially to our foreign brethren, may appear a contradiction between on the one hand the immense influence which he has exercised over both the physiologists and the profession in general in this country, and the reverence in which his memory is held by us, and on the other the small amount of definite gain to the broad truths of physiology, which in the general history of the science is usually attached to his name.

The reason, I would suggest, may be found in the reflection that John Hunter was emphatically a man whose ideas outran the knowledge of his age. Not only was he himself somewhat meanly provided at the start with such general knowledge of Nature as existed at the time, but he had to struggle with the imperfections of the physical, and especially of the chemical, learning of the day. So long as he busied himself with special and superficial problems which could be solved by the help of direct observation and experiment, or by the comparison of animal forms, he was happy and successful; but his genius was ever pushing him forward towards higher generalisations concerning the nature of vital processes, and then he found himself at cross purposes with the chemical and physical teaching of the age. What he heard from his brother chemists and physicists often hindered instead of helping him. Hampered by this, he often was led by instinct to conclusions for which he could give no explicit satisfactory reasons; still more often he failed to clothe his conceptions in intelligible forms, because neither chemistry nor physics could give him the terms he needed.

Let any of us to-day throw himself back a hundred years and try to fancy what his thoughts about the animal frame would be, if the composition of water were as yet uncertain, if the existence and nature of oxygen were unknown, and all the manifold processes of oxidation wrapped in obscurity and confusion, if he were without the guide of the doctrine of conservation of energy. If we do this and thus put ourselves somewhat at John Hunter's standpoint, when we read in his works that one of his fundamental ideas was that there were three kinds of matter, common matter, vegetable matter, and animal matter, the latter being, as he said, "a second remove from the first," that he believed all vegetables to be formed out of water, and was consequently led to the view that water, though to appearance the simplest substance in existence, "must be of itself a compound of every species of matter into which we find it capable of being converted," we should not laugh at his views as being absurd, but rather ask ourselves whether his ideas were tending, and how they would read translated into modern phrases.

And I venture to urge that when an adequate translation of Hunter's obscure and rugged diction is carefully made, it will be found that in reality he was stretching out his hand for those doctrines of protoplasm which form the basis of our teaching to-day. We have cast away the animistic conceptions of old. Descartes has been justified of his intellectual children to the extent that we have been shown how in large measure the phenomena of life are the results of the working of an exquisite machinery; but we have not driven animism wholly out of doors, we have but swept it into the corner of the tissues, into the cell. We are still, after Hunter's fashion, obliged to admit an as yet impassable gulf between the characters of that protoplasmic matter which we call living, and of that common matter which we call dead. Before the problem we stand as helpless as he did before other lesser ones which we seem to have solved, and possibly our gropings towards its solution may appear to our successors as strange as his do to us.

Some of us may have visions of a possible molecular interpretation of the change from dead food to living flesh. In Hunter's mind also, lying hid behind his vitalistic expressions, there were like conceptions. He too speculated, as we do now, that the phenomena of life might be due to "just a peculiar arrangement of the most simple particles."

Indeed, when we read Hunter, thus translating him as we go, it is most striking to note how many of his views adapt themselves at once to modern conceptions, and I cannot but think that we underrate rather than over-estimate the influence which his labours have had in preparing a ready acceptance for the doctrines which we now teach.

I cannot leave John Hunter without saying a word concerning his friend and fellow-worker, William Hewson. Born in 1739, dying of a dissection wound in 1774, in his thirty-fifth year, while his work, so to speak, was just beginning, this gentle Teacher of Anatomy left behind him the record of labours which, if they be considered as epoch-making, afford a distinct contribution to knowledge, and are of such quality as to make every reader of them sincerely deplore his untimely loss. His memoir on the lymphatics, and that on the red corpuscles of the blood, in which he first pointed out that these were discs and not spheres, as Leeuwenhoek thought, are perhaps, though admirable in their way, anatomical rather than physiolo-

gical; while in his Essay on the Properties of Blood, published first in the Philosophical Transactions for 1770, and afterwards in a separate form in 1771 and 1772, he gave the first sound account of the coagulation of the blood, shewing much more clearly than had been done before that the phenomena were due to a solidification in the liquor sanguinis, anticipating Johannes Müller in his proof that coagulation was independent of the red corpuscles, recording many discoveries which have had to be rediscovered more than once again.

John Hunter, I have said, failed to see his way because he was without the lamp of adequate chemical and physical knowledge. The physiologists of the nineteenth are distinguished from those of the eighteenth century by this mark above all others, that the former got to know, while the latter remained igornant of, the nature of the process of oxidation. While the western world was in throes with the labour of a new order of things, social and political, an immortal Frenchman, in the centre of the convulsions, was quietly preparing a scientific revolution, no less far-reaching in its results. If we think over what every tyro in physiology knows now, and dwell on the promise of what we are about to know, comparing the physiology of to-day with that of John Hunter, we must, I think, confess that even the work of William Harvey was less momentous in its results than the exquisite demonstration by the great Lavoisier of the true nature of respiration, so great were the clouds of darkness which that discovery rolled away.

And England may justly be proud that she, too, had a hand in that glorious work, for Lavoisier's path was prepared for him by the labours of an Englishman; an Englishman who, as in so many cases before, was no member of the University professoriate, no Fellow of the College of Physicians, no member even of the medical profession, but, like his forerunner Stephen Hales, a minister of religion, though a minister of an irregular, often persecuted cult. I think I am not saying too much when I assert that Joseph Priestley, when in 1771 he showed that air rendered unfit for respiration by being breathed, or through combustion taking place in it, became under the influence of living plants once more fit for breathing, and still more when in 1774 he atoned for his previous advocacy of phlogiston by the discovery of oxygen, won for himself the right of being called a physiological worthy.

Having reached the nineteenth century, and drawn near to matters which have been the subject of bitter controversies, well remembered, and indeed shared in by members whom we are delighted to see able to take part in our Congress to-day, my words may fitly come to an end. But I cannot close without saying at least a word concerning three English physiologists of the first half of our century whom not ourselves only but the whole brotherhood delights to honour.

Thomas Young I need only name, for though for some time an active member of the medical profession, though physiology owns him as one of her chiefs, on account of his admirable labours on vision, though his counsel and criticisms were of frequent value to his friends more directly engaged in physiological research, he was one of those many men whom the profession has given to sciences other than our own, and he is remembered not so much as a Physiologist as the Natural Philosopher of his time.

When I mention the name of Charles Bell it is not to revive the controversies of which I just spoke, nor will I attempt here to distribute the exact meed of praise to him, to Magendie, and Johannes Müller respectively, in the all-important matter of sensory and motor nerves. I take it that all who have gone into the story are willing to admit at least this, that Charles Bell was the first to lay hold of the truth, and the first to afford approximative, though not complete, proof that sensory and motor impulses pass along different fibres, and travel to and from the spinal cord by different spinal roots. That, and that only, being admitted, the issue in 1811, though for private distribution only, of the 100 copies of the New Idea of an Anatomy of the Brain, becomes at once an epoch in the physiology of the central nervous system. With the subsequent firm experimental establishment of Bell's idea, the understanding of the central nervous system stepped at once from a platform which was not so very different from that of Willis to a platform which, in its main features, is the one on which we stand to-day.

But the story of Charles Bell's great achievement while it gives rise to congratulation contains a warning. A careful study of his works compels one to confess that good fortune had no small share in his success. As things turned out in one leading conception of his new idea he was right, but as one reads his memoirs, one feels that he might have gone wrong in a way which would have been impossible for the other men of whom I have spoken: Priestley and Hunter, Hales, Boyle and Harvey. We all know that he brought forward striking experimental proof of the distinct functions of the anterior and posterior roots of spinal nerves. We also all know that later on he refused to employ the experimental method, and relied exclusively on deductions from anatomical data, and the teachings of pathological cases. In his paper "On the Nervous Circle which connects the Voluntary Muscles of the Brain," after stating his theorem that each muscle is connected with the brain by both motor and sensory fibres, he goes on to state an imaginary experiment by which this might be proved, but warns the reader that the fibres of the nerve must be stimulated outside their origin from the central nervous system before they become mixed. And he continues thus: "To expose these nerves near their origins, and before any filament of a sensitive nerve mingles with them, requires the operator to cut deep; to break up the bones, and to divide the bloodvessels. All such experiments are much better omitted; they can never lead to satisfactory conclusions." And again, a little later on, we find these words: "I feel a hesitation when I reason upon any other ground than on the facts of anatomy. Experiments are more apt to be misinterpreted, and the very circumstance of a motor and sensitive nerve being generally combined together, affords a pregnant source of error."

I suppose we are all willing to admit the justice of these remarks. An anatomical fact, clear and unmistakable, is more to be trusted than the result of a complicated experiment, with a multitude of varying factors, all of which must be appreciated before the outcome is correctly interpreted. He who makes an experiment, be it on a living animal or on a dead weight, without valuing the possibilities of error, makes a bad experiment, or rather no true experiment at all. And undoubtedly our science has again and again suffered, I may say is continually suffering, from deductions rashly made from so-called experiments badly conceived and rashly carried out. But passing on one side the reflection that the so-called facts of anatomy, when they are pushed far enough, often become dim and uncertain, and have themselves to be verified by experiment, the true philosopher, I venture to think, will reply that in the long run the difficulties of an experiment are in a way the measure of its value, that being overcome by care and diligence, they in the end bring the greatest rewards, and that he who would enter into Nature's secrets must be prepared not to turn back at such rebuffs as at a slough of despond, until he has thoroughly satisfied himself that their amendment is above his might, that there is no path by that way. I imagine that Stephen Hales, revisiting the earth and reading Charles Bell's sentence, would have been tempted to say, "I, as a clergyman, with temptations to devote myself to other studies, have felt equally with, if not more than yourself, the repugnance to experimenting on living animals; I, as mathematician and physicist, trained in severer studies than those which have occupied you, have felt and seen as clearly, if not more clearly, than you the possible errors which the subtle fluctuations of the living frame must introduce into all physiological work; but so far from discouraging me these obstacles stimulated me to exacter efforts; the cognisance of them saved me from possible errors, and led me to place the physics of the circulation on a basis such as they had never had before my time."

And, indeed, the Nemesis, which ever follows after errors, be they even errors committed with the best intentions, or in spite of the greatest care, overtook Charles Bell. We justly honour him as the author of the distinction between motor and sensory fibres; but that was only a part of the whole system of his new idea. That was the part which he submitted to the touchstone of experiment; that is the part which has remained, and which continues to this day, more and more abounding at once in scientific fruits and in practical benefits to mankind. The rest of his views (his nervous circles, his paths within the cerebral-spinal axis, his respiratory nervous system)—and if rumour be true, it was on these that he most prided himself—he refused to submit to experiment. And what has become of them? Are they not forgotten, or remembered only as stumbling-blocks, and rocks of offence? Nay more, he maintained that the anterior and posterior columns, as the continuations of the anterior and posterior roots, were engaged exclusively in conveying motor

and sensory impulses respectively; and, though at first his anatomical data led him to look at the cerebellum as the origin of the latter, he subsequently satisfied himself that he could trace both right up to the cerebrum. It is not, I venture to think, too much to say that the chief effect of this view has been to serve as a stumbling-block and hindrance to further inquiry. He further insisted that, in the midst of the general sensori-motor nervous system there was intercalated a special nervous mechanism, of independent distribution and function, a nervous mechanism of respiration. The reader of Charles Bell's papers (where he is treating of the independence of the respiratory function) cannot but feel that, with his genius, had he not forsaken the path of experiment, he must almost inevitably, in struggling to understand the respiratory nerves, have come upon that doctrine of reflex action which was destined at once to complement, and at the same time to swallow up, the doctrine of motor and sensory fibres.

That Charles Bell accomplished as much as he did shows how valuable are the lessons which may be learnt as simple but careful deductions from anatomical data; that he failed to accomplish more warns us no less clearly that the teachings of anatomical deductions needed to be verified or guarded by experimental research.

The mention of the word reflex action brings me to the last Englishman whom I will name to-day. And here, too, I will not attempt to revive bitter controversies, which in the memory of many living seem only just to have calmed down. I think you will agree with me that even when we have dwelt as strongly as possible on the insight expressed in the works of various anatomists and physiologists, from Descartes downwards, where they have insisted on the independence from cerebral action of certain movements (and among these are certainly prominent several of the names which I have mentioned to-day: Willis, Boyle, Hales, and especially Robert Whytt), when we have enlarged as much as possible on the views of Prochaska and the experiments of Johannes Müller, there still remains the fact that the doctrine of reflex action became firmly established as a definite part of physiological and medical teaching largely by the labours of Marshall Hall. It was his numerous researches, and perhaps even more his enthusiastic, ingenious advocacy, and the skill with which he applied the results of the new doctrine to the practical art of healing, which brought about a revolution in our conceptions of the nervous system.

Marshall Hall may well serve as the near-point of this brief historic sketch. Names coming after him are too near the mind's eye to be brought satisfactorily into mental focus. Rather than attempt to speak of the work of men since his time, many of whom are happily still with us, I would prefer to indulge for the few minutes still left to me in a few reflections, which must, I think, force themselves on every English physiologist who is led to compare the present and the past.

I have, I venture to think, already said enough to show that in physiology, as well as in other sciences, certainly during the seventeenth, and though to a less extent during the eighteenth century, England held its own against other countries as regards productiveness both in quality and quantity. In the first third of the nineteenth century the three names on which I have just dwelt—Bell, Young, and Marshall Hall—present an equally satisfactory contribution from English minds to physiological science.

But we Englishmen are, I imagine, the first to admit that in the middle third, which has gone, and the latter third which is passing, of this nineteenth century, Great Britain has not left on the physiological record a mark commensurate with the number, the intelligence, and the activity of its inhabitants. One reason is not far to seek. Across the Channel we find that the pursuit of learning is in the hands of a distinct professoriate, whose acknowledged academic function is to carry on research, and indeed the well-being of the professoriate may be taken in the several countries as the measure of scientific fruitfulness. In proportion as the universities in a country are numerous and well cared for, so that the rivalry between them becomes an incitement to labour, without leading to a commercial system of outbidding, we find research active and fruitful.

In England, leaving out for the present the other components of the United Kingdom, we have—or rather had—but two universities, those of Cambridge and Oxford; and there, as we have seen, as far as physiological science is concerned, late in the seventeenth century folded their hands for sleep.

The College of Physicians, so long as the field of science was limited and the bonds between it and the Royal Society continued close, had, more or less, an academic function, and the labours of Harvey, Glisson, Willis, and Lower were all carried on with the help or sympathy of the College. But as science widened and became differentiated, as the demands of practice became more exacting, the College lost its hold on physiological inquiry, its efforts were directed exclusively to disease, its speculative activities were wasted in the doctrines of the schools, and in the long gap from Richard Lower to Thomas Young and Marshall Hall no distinctly physiological voice of weighty tones spoke from the College hall, no name of prominent physiological worth was inscribed on the College roll.

The names of Hunter, Hewson, Bell, and many others of less moment which I might mention, suggest the reflection that the various medical schools which at the end of the eighteenth, and especially during the present century, have sprang into existence in London, might be considered as supplying the place of a university. And, indeed, had they been less numerous, they might have performed an academic function—they might have afforded homes for professed physiologists. With the ever-widening field of physiological research it has become year by year less and less possible for men to serve with success it and some other master at the same time. Men of genius, like Hunter and Bell, did so it is true, and men like them may do it once more; but with each succeeding decade the task becomes more difficult, and what has been is less likely to be again. As the present century has advanced it has become more and more clear that in England, as abroad, a physiologist must devote his whole life to his work. But the various competing, and in many cases small medical schools of the metropolis, were unable to afford independent physiological careers. During the middle third of the century, while Alison, Reid, and Goodsir were all professors, there was as a matter of fact one, and only one, professor of physiology in England. And it is no weak argument in support of the view which I am urging that whatever little revival of physiology there may be in these later days is in great measure due to him, the one real professor of physiology. Though after his earlier active years he ceased to publish much in his own name, William Sharpey had a hand in nearly every physiological work of any moment which this country produced from the fourth decade onward, his genial sympathy encouraging younger men to effort, his wide knowledge and marvellous sagacity saving many of them from error. It is idle to speculate on "the might have been," but we may at least venture so far into probabilities as to surmise that such men as Wharton Jones, whose early works were so full of grasp and insight; William Bowman, whose labours on muscle and on the kidney are still classic works, known and read of all instructed physiologists; Carpenter, whose writings have been the early physiological nature of so many of us, and others whom I need not name, would have devoted the whole of their lives, instead of fragments of time, to our science. Had such been the case the nineteenth century would, I venture to think, have had no reason to be ashamed of English physiology.

At the present day careers are opening up, and a fair amount of useful work is, I trust, being done, or rather perhaps would be done had not in this country physiology fallen upon evil days of a kind unknown in the eighteenth or any other century. A zeal, not according to knowledge, has, whatever commendable impulses may have nurtured, it, given rise to legislative action, which has gone far to cripple physiological research in this country. Our science has been made the subject of what the highest legal authority stated in the House of Lords to be *a penal Act*. We are liable at any moment in our inquiries to be arrested by legal prohibitions, we are hampered by licences and certificates. When we enter upon any research we do not know how far we may go before we have to crave permission to proceed, laying bare our immature ideas before those who are, in our humble opinion, unfit to judge them; and we often find our suit refused. We sigh in our bondage, like the Israelites of old; we are asked to make bricks when they have taken away from us our straw. One good fruit of the present congress may be this, that our foreign brethren, seeing our straits, will go home determined in their respective countries to resist to the utmost all attempts to put the physiological inquirer in chains. For we surely are all agreed that experiment is the chief weapon with which we can fight against the powers of dark-

ness of the mysteries of life. This is written in letters which he who runs may read, over all the brief story which I have ventured to tell to-day. What was true in the days of Willis is true now, and I may fitly close with the very same words with which he ends the preface to the Cerebri Anatome:—"Nam aut hac via scilicet per vulnera et mortes per Anatomiam et quasi Cæsareo partu, in lucem prodibit verit as aut semper latebit." "For either in this way, namely, through death and wounds, through dissection and, as it were, by a Cæsarean operation, will truth be brought to light or otherwise will lie for ever hid."

SECTION III.—PATHOLOGY.

ADDRESS

BY

SAMUEL WILKS, M.D., F.R.S.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—I welcome all of you here to-day. But are we not already of one brotherhood? Has not a common bond long ago united us in one family? Although we may not have shaken hands, we have been joined in spirit, or perhaps, some of us have even been in more direct communication by means of winged words. Amongst all the ties which link man and man together, some of the closest are those forged by science. A special scientific inquiry will find two minds closely akin, although separated by thousands of miles, nationalities, or tongues. In our own department of pathology it creates a thrill of satisfaction to feel that the study of some morbid process may have led some of us to the discovery that another investigator, of whose existence we had been hitherto ignorant, has his thoughts and occupation in perfect unison with our own, and that although oceans and continents may separate us, our minds are both attuned to the same string. It is not surprising that the vast subject which more immediately occupies us can never cease to interest man in all its details, whilst he has a resting-place on this globe.

I would fain have inaugurated this section with a general address, but have refrained from doing so, daring not to sacrifice to platitude our too precious time when so much practical work has to be accomplished.

I cannot, however, but occupy you a few moments in order to take a glance at the immensity of the subject before us, embracing questions as it does in which humanity will be for ever interested—viz., those referring to disease, decay, and death.

Our subject, in a word, is Pathology. Pathology has received various definitions, the most common being that which contrasts it with Physiology; for as the latter is regarded as the science of healthy organic life, so the former has been held to be the science of the unhealthy or of the abnormal course of life contrasted with the normal. This division of vital action into normal and abnormal is true in a superficial sense, and might be made theoretically to stand as a definition, but it is by no means applicable to our practical science of pathology, nor can it be made of any value as an expression of diagnostic knowledge in treating the thousand ills to which flesh is heir.

In the first place, it must be admitted that the changes which occur in every organic structure, as years roll on, are to be regarded as normal, unless we take an imaginary or ideal standard of a being living in some former golden age, where nought was known but perpetual youth, and regard every departure from this as morbid. Although we do not frame such a picture to ourselves, but know that the various changes in the bones, the cartilages, the lungs, the brain, and other parts which take place in age, are in harmony with the dictates of Nature, yet how often are we called upon to treat these changes as forms of disease? They are, however, no more unnatural or pathological than the sere and yellow leaf which falls from the oak in autumn.

If, however, these senile changes occur prematurely, they will then be abnormal, and may be strictly regarded as morbid. Herein is one form of a pathological condition with which we have to deal—a premature decay arising from the various causes which bring the organism to an end, either from their operating with unusual force, or from some inherent weakness in the body, which is unable to moderate their action. Now, if all these potent influences, instead of driving the mechanism too quickly, and so bringing it prematurely to an end, concentrate their forces upon one organ only, that organ would become, in ordinary parlance, diseased; but the process there set up may be of exactly the same nature as time would otherwise have produced. In comparatively young persons, for instance, we meet with fibroid and fatty changes in the heart and vessels, distension of the air-cells, alterations in the structure of bones and joints, which resemble in every respect those which age would have ordinarily induced. Therefore many of the conditions which we call disease seem nothing more than the result of the concentration on a particular organ of all those agencies which, under ordinary circumstances, bring about senile changes. These changes, therefore, although senile in character, are abnormal, and therefore may be rightly regarded as pathological.

The pathologist, therefore, cannot but regard the body in the first place in its physiological relations with its surroundings, and mark the alterations which time produces. The physiologist is aware that the production of force must be accompanied by loss elsewhere, seeing that gain and loss are equal, and therefore, in observing organic life he must regard the destructive processes as well as the formative. Life seems to depend upon changes continually going on in relation with the atmosphere in which all living bodies are steeped. The burning of the fuel in oxygen supplies the forces necessary for living processes; we, therefore, although alive, are constantly being consumed. During so many years the body is undergoing combustion, or, we might say, slow destruction, and this process occurs much more rapidly in some persons and in some animals than in others. Why one creature should live longer or burn out sooner than another is not clear; why, for example, should a dog be worn out in ten or twelve years, its limbs be stiff, its sight and hearing impaired, its intellect obtuse, and senile changes be discoverable in its brain and elsewhere, when a parrot may take a century for the production of the same destructive changes? Why tissues of the same composition should wear out in one animal after ten revolutions of the earth when it takes a hundred revolutions to destroy similar ones in another, is by no means apparent. In man, if the destructive and reproductive changes are normally counterbalanced, the ordinary duration of life is reached. If the balance be not kept, the destructive agencies may be in the ascendancy, and life be shortened. If any of the ordinary surroundings which are always exerting their influences upon us, as various kinds of air, food, moral and mental moods, be in any way noxious, they may in time tend to premature death; and if they should act in such a manner as to cause localised organic changes, we should style these changes disease. There can be little doubt that a large number of maladies in England, as gout, Bright's disease, &c., are induced by mere excesses or inequalities in a mode of life which is considered ordinarily correct. It ought to be one of our studies to consider the relations of the human race to the soil, and observe all the circumstances which centuries have induced to bring about this normal or healthy relation between them. We might then observe the effects of the concentration of some of the more untoward of the influences which ordinarily environ it, as well as inquire into the effects of transplantation into another country. It seems that all the usual surroundings of life in civilised society, acting in undue proportion, or in a more determined manner, induce a very large number of the diseases which we are called upon to treat.

In considering all these agencies working for what we call evil, and leading to destruction, we must not overlook an opposing law—that of reparation. Not only do we observe a production of living force in necessary association with a dissolution of material, but an ever-existing tendency towards the remaking of the injured tissues. We can scarcely think of a morbid change in the body which is not attended by another which has an opposite tendency. Every phthisical lung showing destruction of the tissue exhibits at the same time the attempt to limit the process and to save life by shutting off the escape of air from the lung or sealing the ulcerated bloodvessels.

Then, again, in considering the definition of disease, after having observed how large a number of maladies are produced by the influences of all our ordinary surroundings, we have to recognise those external causes of an extraordinary or specific character which prey upon the human frame, and

often bring its machinery to an end. Now, if these causes are obviously parasitic, we are not witnessing so much the case of disease as the spectacle of one animal preying upon another. As regards the parasite, it is pursuing its normal life history, and as regards the patient or the host, he is simply being destroyed; the difference in his mode of death from that which would result from the onslaught of a wild animal would consist merely in time. If a man fall a victim to the bite of a cobra, he is not said to die of disease; but the term is applicable if he die of glanders. There is this difference, however, in the latter case—the poison is not a natural one even in the infecting animal. If, however, in these infectious diseases the morbific cause be an animal or vegetable organism, although microscopic, then we really have to deal with the operation of one living being acting upon another, and the so-called specific malady exhibits nothing more than the natural course of life of certain specific organisms. The term disease, according to the definition, is here again scarcely applicable.

All these abnormalities of the human organism, under whatever conditions they may arise, suggest that as every branch of biological science is being studied in relation to the lower organisations, and according to the law of evolution, so must pathology become the subject of a large field of inquiry, and be made to embrace the diseases of all animal and vegetable life. The comparison of disease in man and animals may throw much light upon its nature, and it is remarkable that so few persons have been stimulated to the work, by considering the long controversy which has taken place as to the relation between vaccinia and variola, or hydrophobia and rabies. A true human pathology should have its basis in comparative pathology. Here lies a mine of wealth but little worked. As at the present time every structure and function of the human body is being studied in reference to its antecedents in the lower animals, so there can be no doubt that the various morbid changes to which it is liable may be also profitably discussed in reference to similar actions in more simple forms of life. The truth of this has been clearly seen by philosophers who have had no special acquaintance with our department of science. Thus Buckle, in his "History of Civilisation in England," says: "The best physiologists distinctly recognise that the basis of their science must include not only the animals below man, but also the entire vegetable kingdom, and that without this commanding survey of the whole realm of organic Nature we cannot possibly understand even human physiology, still less general physiology. The pathologists, on the other hand, are so much in arrear, that the diseases of the lower animals rarely form parts of their plan, while the diseases of plants are almost entirely neglected, although it is certain that until all these have been studied, and some steps taken to generalise them, every pathological condition will be eminently empirical, on account of the narrowness of the field from which it is collected." This is almost as true now as when written several years ago, but we are pleased to think that our countryman, Sir James Paget, has already removed this slur upon our scientific procedure by his lecture on "Elemental Pathology," in which he shows the importance of observing the resemblances between the changes in the various tissues of man and the vegetable world, and also the deductions to be drawn therefrom.

Again, if the specific diseases be due to organisms, and the hypothetical *contagium vivum* be a reality, it must be subject to the same laws as other organic matter; and if the doctrine of evolution be true, it must have numerous relations with families of its own kind, and perhaps with others which are now obsolete. This idea has occupied the minds of several medical men in this country, and it will no doubt further fructify in their hands.[1]

A highly contagious disease prevailing in a particular locality may be exhibiting the differentiation of some more simple, less virulent, and widely-spread disorder. For example, a slightly contagious epidemic sore-throat might in course of time develop into a more virulent one until it culminated in diphtheria; and if this disease be due to an organism, the latter might have found a more genial soil for its development, or be altered by propagation and time, so that new properties might at last have been added to it. There may be a progressive development of infectiveness. Then, again, the doctrine of natural selection might obtain in the fact of some specific diseases remaining amongst us, while others have become obsolete. The same law, too, if allowed its full operation, might tend still more than it does to the subjugation of many hereditary diseases; for as these appear in youth, and often cause death, they would fade away by a process of self-destruction. As regards the specific diseases, we see again how the most susceptible persons would be struck out by the poison and the least susceptible remain, so that the poison would be modified in its virulence. We witness this fact in the more moderate characters of the exanthemata in all civilised nations, in comparison with the more profound effects produced by them in nations where the diseases had been hitherto unknown, as, for example, the fatality in the Pacific Islands of our comparatively mild British measles.

Besides the maladies which are induced by the evil influences of our ordinary surroundings, and those due to specific causes just named, there is a class of diseases styled new growths, which take a very large share in adding to man's mortality. The advance made in our knowledge of these structures is very considerable, and is still rapidly progressing towards a determination of their origin and the discovery of their relation to the normal tissues. These investigations are assisting us in discarding some of our older notions regarding their constitutional and malignant nature, and proving that many are accidental in their origin, and therefore may possibly be averted.

In these brief remarks we see how the simple definition of pathology as a deviation from the healthy standard fails in its application, and how wide is the range of subjects included in its domain. What these are, you, gentlemen, are about to illustrate in the different subjects which you will bring before the section.

SECTION IV.—MEDICINE.

ADDRESS

BY

SIR WM. GULL, BART., M.D., D.C.L., LL.D., F.R.S.,
PRESIDENT OF THE SECTION.

GENTLEMEN, FRIENDS, AND COLLEAGUES,—I am deeply sensible of the honour conferred upon me in being called upon to preside over this Section, and I offer you my cordial thanks.

Happily the duties will not be arduous, since the General Addresses which have been arranged and admirably allotted relieve me of the responsibility of attempting to develop before you the actual position of medicine, or the probable lines of its future progress.

As the International Medical Congress assembles in England for the first time under the auspices of Queen Victoria, so I am reminded that three hundred years ago, under Queen Elizabeth, Bacon enunciated for the first time, in the simplest terms, the position of the student of Nature in relation to the work before him.

Prone as we mostly are to easy satisfaction on imperfect evidence, and to rest in the *experientia fallax*, it is something that we are all agreed in aim and means, and admit that there is but one source and test of knowledge, "the observation of the order of Nature." We have no principles, but facts; no eclecticism, but of these; and nothing touching the conditions of humanity is foreign to our consideration.

Anatomy, physiology, and pathology have an impersonal and scientific object. Their aim is wide and general. The facts with which they deal are subject to no deflection from affection. Great or small, they have all an equal value. Pathology even denies its name in the presence of that which is universal, merges into physiology, and sees that "whatever is, is right." But far otherwise is it with clinical medicine, where the welfare of the individual alone has to be considered. We call ourselves physicians, and cannot be too jealous of the title and of all that it includes; but we are *medici* or curers of disease. Hence, together with the highest duties which science imposes, there are the various personal claims of humanity, augmented by suffering and charged with every disturbing element that weighs upon the heart of man; but at the same time for us with every high and quickening motive. These are warping influences, and to correct them we have often with effort to bring our clinical

[1] Dr. Alty, Dr. Thorne, &c.

questions into relation with that which is impersonal and above passion.

It is an agreeable fancy on these occasions to suppose that civilisation may have been differentiated into its various nationalities, less for the strife of war, than that each nation might contribute, according to its genius, to the progress of the sciences. It may be utopian to see it thus. Yet a review of the past two or three centuries would suggest as much. That scientific congresses have met, and that they continue to meet, promise better things to come out of the social chaos; as the imagination realises organisation springing up amidst the strife of the elements in an early world.

To Italy and the South we owe the early development of anatomy. The illustrious names of Morgagni, Galvani, Scarpa, and others, many of whom have left their names for ever inscribed on our textures, bear early and continued witness of this. And although we Englishmen will ever be tenacious of vindicating for our Harvey the immortal honour of having first demonstrated the circulation of the blood, we equally admit that Italy was his teacher of anatomy. And no less did Italy lead the way in morbid anatomy, as testify the pages of Morgagni in his treatise "De Causis et Sedibus Morborum."

To Germany and the North we are largely indebted for analytical progress. Their profound investigations in chemistry, and their exhaustive researches into minute anatomy and histology, have gone far to solve the problems of organic composition and organic structure. I will not support my position by citing illustrious names. Happily, many whom I should have to mention are still among us; but biological science will never forget Leeuwenhoek and Ehrenberg, Berzelius and Liebig, nor the labours of the modern schools.

France, with her rare synthetic faculty, seems specially gifted for promoting the science of physiology. I have but to recall the name of Bichat, and to point to the refined investigations of Bernard, and to those of his successors of to-day. And with France I may join Switzerland, whose Haller gave the earliest and strongest impulse to the study of the laws of living things, as a separate science; though, as in the case of Harvey, his lamp was lighted abroad in the famous school of Leyden.

The English genius is perhaps more fitted for the Historical method and its obvious lessons. But perhaps I ought not to say obvious, for not rarely the English have been satisfied with records without inferences. There are, however, splendid instances of both; of the one in the museum of Hunter, and of the other in the works of Darwin.

But here you will be ready to exclaim "Siste!" for who in the least acquainted with the progress of the biological sciences in different schools at the present time would venture to claim for either some special fitness over the rest for any line of pursuit, and when the spirit of each can say like Goethe's Natur-geist:—

> "In Lebensfluthen, im Thatensturm
> Wall ich auf und ab
> Webe hin und her!"

Some have prophesied that the advancement of the Biological Sciences will leave medicine a barren waste in their midst; but such a result, in the natural course of things cannot happen. There is an indissoluble union between all the sciences which, for medicine especially, human interest will ever strengthen. The past history and the present state of our profession give us abundant assurance of this. It is not too much to assert that the study of medicine will for all time attract a large proportion of the best thinkers and workers of the world. It has ever been so; and what has been doubtless shall be in the time to come. Besides, almost every germ of scientific thought has sprung in some way from medicine; and I have only to remind you that some of the most illustrious physiologists and pathologists of to-day are members of our own profession. And if from the delicacy, intricacy, and the demands made upon all the powers of the intellect by the extent and character of their investigations, they have, as it were, turned aside from immediate clinical work, they are still so much in union with us, that we daily at the bedside avail ourselves of the results of their labours, and gratefully acknowledge that they are our ministering angels, ascending and descending upon the ladder of science in the furtherance of all good practice.

Clinical medicine, however, of itself, affords opportunities for the study of Pathology, which are in some respects at least unique. Through it, and through it alone, we become acquainted with the first deviations from normal function. From such early beginnings we may trace the development of pathological processes, until the organism is finally, and in different ways, overwhelmed by them. I need only suggest those chronic lesions which spring up from conditions *ab intra*. In the latter stages of these degenerative processes we are apt, without their history, to be so impressed with the more prominent mechanical results, that these would seem to us the original and essential conditions; as to the Nile-worshipper, the river is a power in itself.

It is well for the progress of clinical medicine that its lines of investigation are thus intimately interwoven with the more scientific departments. It saves us from the dangers of separatism, and our colleagues from those of pharisaism; and it quickens our observations where they might otherwise be thought insignificant. If we cannot weigh and measure the data before us, we may still advance the solution of some of the more difficult problems of our condition by critical and exact records. How much has been done in this field of late, especially in cerebral physiology, need not now be told. Every fact to the clinical physician has its value, though it may be of a different order to the phenomena of gravitation. A tone of the voice, the play of the features, the outline and carriage of the body, are to him as invariably related to the central conditions which they reveal as are the grosser facts of nature.

The work of the next few days, so far as it is foreshadowed by the list of promised papers, will raise some important pathological questions. You will be asked to consider peripheral lesions, having their origin in nerve-centres—lesions which have, for the most part, been hitherto chiefly considered primarily humoral and chemical, but now referred to "trophic changes of nerve-origin." On this point it may not be uninteresting to notice how "Solidism" is widely re-asserting itself in the science of living things—not as an *à priori* system, but through the progress of our knowledge. The proximate conditions of pyrexia are no longer vaguely referred to nerve, but to definite nerve-centres; hyperæmia and inflammatory changes to sympathetic lesions; abnormal chemistry to the great respiratory centres; the strange conditions of Addison's disease, with its characteristic pigment, to the supra-renal bodies, themselves probably but nerve-centres, and related, at least by structure, to the system of the pituitary gland; epilepsy, supposed in Hippocratic times to be due to extraneous maleficent spiritual influences, is traceable to apparently trifling changes in a few grey nerve-cells. The specific fever-processes notoriously owe much of their character and intensity to the nervous system. Their relation to time, their occurrence only in warm-blooded animals, the great mortality they cause through nerve-exhaustion, and the immunity they leave behind them, indicate that, whatever may be the nature or mode of operation of their several poisons, it is by implication of nerve-elements that fever obtains its chief clinical characteristics.

Further, in the advance of "Solidism," what can interest us more than the recent investigations on contagia? Perhaps no more important step has been made in practical pathology than the proof that some at least of these contagia are organised solids. This discovery, which it has tried the patience, experimental skill, and scientific criticism of the best observers to establish, has brought us at length within view of that which has hitherto been so mysterious. To have been able to separate, though imperfectly, the contagious particles—to have come to the conclusion that no fever-poisons are soluble—is a hopeful preliminary towards forcing them to yield up the secret of their nature.

If "Solidism" as a theory of organic processes wanted confirmation, we could point to nothing more striking than the present established views on putrefactive changes, and to the amazing fact that the normal textures and fluids of the body resist decomposition, unless invaded by microscopic organisms.

May we not hereafter find that all organic chemistry is the resultant of mechanical changes in organic solids?—all nature, in fact, as Newton asserted, but the Great First Cause. Of this we are admonished on all sides. Histology, physiology, pathology, clinical medicine, teach us more and more the supreme importance of *form* and *relation*.

Lesions extending from alteration of the blood-vessels will also come under consideration. Of course the most common facts relating to aneurism and valvular disease, or such as are thrombotic or embolic, need not be discussed; but there is a contribution which raises the question how far

primary, general, arterial tension may be a starting-point at least in renal pathology.

The etiology of typhoid fever will be raised at one of our meetings. This cannot but enforce a rigid criticism of the infective processes, and of the differences between the states of simple pyrexia, septicæmia, and the specific fevers.

The pathology and treatment of gout, rheumatoid arthritis, and rheumatism, to which, in one form or another, the English seem rather especially prone, will also come up for discussion. Whether they have humoral sources has of late become more and more doubtful.

Of the pathology of acute rheumatism we may be said to know but little beyond its clinical records and its symptoms; but, unhappily, this has not always been sufficiently recognised, and too often a dangerous polypharmacy has rushed into the cure where science has not yet advanced her foot.

The forms of renal diseases, for a long time included, with little exception, under the term "Bright's Disease," will undergo a further degree of analysis. It was a happy omen of this when they moved from the singular into the plural form, "Bright's Diseases;" and we may hope now for a more methodical sub-division of them, making their clinical recognition more easy and their therapeutics more precise.

In the matter of diagnosis we have invited contributions on the pathonomonic and diagnostic value of the localisation of disease in the brain and spinal cord, which will be an occasion for a review of our knowledge of *cerebral* and *spinal mechanism*, and for further elucidating the pathology of the different conditions of blood, bloodvessels, and connective tissue concerned in the nutrition and diseases of these great nerve-centres. Brain-texture proper seems but little liable to primary disease. As the nervous lamina takes the lead in embryonic evolution, so it would seem that its equivalents in the adult maintain a degree of resistance to morbid change throughout life.

Time fails me to speak of all that we hope to undertake. Any one paragraph of our programme would more than consume the time at our disposal. It must not therefore be inferred that the importance attached to any one of the subjects is in proportion to the prominence given to it in this hasty review. The treatment of disease, for instance, is a subject too large and weighty to speak of in general terms. In some minor points it will come before us, as in a paper on the advantage of High Altitudes in the Treatment of Pulmonary Phthisis.

An organisation such as our own, which it has taken countless ages to evolve, must reasonably require incalculable time for its scientific analysis; and the same may be said of the infinite and varying conditions by which it is maintained, and upon which its existence constantly and immediately depends. At best we know but a few proximate facts, yet these in judicious hands have afforded a good harvest of practical results: what better fruit we may gather when science has penetrated deeper into the laws of our being, and all that affects it, it is impossible to forecast.

In the spirit of the exhortation given by the President in his address to-day, and in the slightly altered words of Bacon, with whom I began, let me conclude by saying, "It were a Heaven upon earth to have the mind illumined by knowledge, to move in charity, and turn upon the poles of truth."

SUB-SECTION IV.—DISEASES OF THE THROAT.

ADDRESS

BY

GEORGE JOHNSON, M.D., F.R.C.P., F.R.S.,

PRESIDENT OF THE SUB-SECTION.

GENTLEMEN,—The first duty that I have to perform is to express my high appreciation of the honour conferred upon me in the appointment to preside over this important sub-section of medicine. I have next the pleasure to offer a hearty British welcome to the many very eminent laryngologists who, from various parts of the continents of Europe and America, have done us the favour and the honour to join this Congress, and to make, as they are about to do, numerous important and highly instructive communications to this department of medicine. The history of the laryngoscope has been often written, and is well known to this learned assembly. I am sure, however, that I shall have your sympathy and your approval in giving a brief expression of our indebtedness to Signor Garcia, whom we have the pleasure to welcome amongst us here to-day, for the pre-eminent share which he has had in the invention of that instrument. While all previous attempts to inspect the living larynx had been incomplete and barren of further results, Signor Garcia, who has the unquestionable distinction of having been the first man whose thoughtful ingenuity enabled him to see his own larynx, published the results of his autoscopic observations in the Proceedings of the Royal Society (vol. vii., 1855); and this publication led on, through the appreciative mind of Professor Türck and the indefatigable zeal and exertions of the late lamented Professor Czermak, to the creation and the rapid development of the art of laryngoscopy.

It is scarcely possible to over-estimate the practical importance of this simple invention. I have been long enough in practice as a physician to have had ample experience of the enormous difficulties which often attended the diagnosis, and therefore the treatment, of diseases of the throat in the dark prelaryngoscopic age. And now, by contrast, the result of the new light thrown upon this region by the throat mirror has been that within the last twenty years our knowledge of laryngeal diseases, including accuracy of diagnosis, with certain and successful treatment, has made greater progress than that of any other department of medicine or surgery during the same period of time. In making this statement I am not unmindful of the immense advance which has been made in the diagnosis and treatment of eye diseases since the genius of Helmholtz conferred upon mankind the inestimable gift of the ophthalmoscope.

It is not without interest to compare the practical gains, with regard to both diagnosis and treatment, which have been derived respectively from the two analogous instruments—the ophthalmoscope and the laryngoscope. In regard to facility and accuracy of diagnosis the ophthalmic surgeon and the laryngologist may be considered to have been about equally benefited by the use of their respective instruments. If we take into account the numerous remote diseases, more especially those of the nervous system, upon which the ophthalmoscope has thrown a new light, that instrument may perhaps be considered, in the matter of mere diagnosis, to take precedence of the laryngoscope. With regard, however, to improved methods of treatment, and in particular to the introduction of entirely new and previously impossible mechanical operations, there can, I think, be no question that the laryngoscope has done more than can fairly be claimed for the ophthalmoscope. Without doubt, the exact diagnosis of eye diseases has led to improved and more successful treatment; but the ophthalmoscope has afforded no direct aid to treatment comparable, for example, with the safe and easy removal of morbid growths and foreign bodies which the laryngoscope has made an every-day proceeding.

Amongst the most interesting and important of the scientific and practical gains which have resulted from the use of these two instruments, and which may be claimed alike, if not equally, for both, is the fact that, by the inspection respectively of the interior of the eye and of the larynx valuable light is often thrown upon the diseases of remote but physiologically correlated organs. If, for example, the ophthalmoscopist sees in the eye a retinitis significant of renal disease, a neuritis indicating cerebral tumour, or an embolism the result of valvular disease of the heart, so, in like manner, the laryngologist is often led by the observation of the paralytic or spasmodic condition of one or more laryngeal muscles to the diagnosis of a general neurotic condition to which the term hysteria is often applied, or of a special local disease in the nervous centre, or, it may be, of a tumour, cervical or intra-thoracic, pressing on the pneumogastric nerve or its branches.

It is obvious that all clinical facts of this kind, indicating, as they do, the interdependence and the close physiological relationship between various tissues and organs, are of great scientific and practical importance. There is reason for the belief that the more thorough and profound is the investigation of any disease or class of diseases the more numerous and intimate will be found to be the relationship with other morbid states. The study of renal diseases affords abundant and most instructive illustrations of this proposition.

The more special, therefore, is any department of practice the greater is the need to recur often to general principles, and to bear in mind that so close is the *solidarity* of the

animal organism that there is a literal and physiological truth in the apostolic statement: "Whether one member suffer, all the members suffer with it." The ill-informed portion of the public are apt to look upon a man who has a reputation for skill in the treatment of a particular class of diseases as of necessity unacquainted with all other diseases. We, on the other hand, maintain that of the specialist it should be said with truth that he is one, not who knows less of disease in general, but who knows more of the particular class of diseases to which he has devoted most time and especial attention and study.

The Hippocratic maxim "Life is short, and art is long," is as true now as it was two thousand years ago. Bearing this in mind, and knowing, as I do, how many valuable communications are in store for us, I will occupy no more of your time, but will at once call upon the gentleman whose name stands first on the list to read his promised paper.

SECTION V.—SURGERY.

ADDRESS

BY

JOHN ERIC ERICHSEN, F.R.S., &c.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—Surgery is never stationary. To be stationary while all around is in movement would be practically to retrograde. But movement does not necessarily mean advance. The general direction of the movement may undoubtedly be forwards, but the factors of that movement do not all equally tend to progress. When the history of surgery comes to be written—and this has never yet been done—it will be found that the surgery of the nineteenth century has not been uniform in its progress in all departments; that its advance has not been continuously in one line, but that its progress has been materially affected by the prevailing bias of the professional mind of the day. Anatomical at one time, physiological at another, the tendency of the surgery of the present day is influenced in one direction by the mechanical spirit of the age, and in another by the advanced pathology, which is one of its chief medical characteristics. Yet the continuous advance of our art is undoubted. The gain that thus results has been definitively secured to surgery and to mankind. It can never be lost. Every conquest that has been made has been permanent. Year after year some new position has been won, often, it is true, after a hot conflict of opinion; but once occupied it has never been abandoned. Thus our standpoint has ever been pushed on in advance. For knowledge in science is cumulative, to its stores each generation has added, and skill in art is a tradition that is hereditarily transmitted from master to pupil, if not by the individual, yet by the profession to which he belongs, from which he has acquired, and to which he bequeathes it, augmented and perfected by his own labours. With the knowledge of our predecessors we are familiar. What they have done has been transmitted to us, and we can readily accomplish. In what we can do we may be sure our successors will not fail.

It is well that from time to time this advance should be measured, this gain weighed. The business of this section is not only to measure the extent of the advance, but to determine the value of the gain, and to do this, not so much by the novelty of the practice, or by the brilliancy of its exposition, as by an estimate of its intrinsic merit, as shown by its proved utility. Our business here has to do with practical considerations, having reference to the recent advances in, or the future lines to be followed by, modern surgery.

The executive of this section has proposed eight subjects for the consideration of its members. It is hoped that these will be found to include the more important surgical questions that are at present most prominently before the profession. The short time at our disposal, which will scarcely enable us to do full justice even to these subjects, has prevented the possibility of our bringing forward other and perhaps equally interesting questions; but some of these will be found to have received consideration in the papers which will be read, either *in extenso* or in abstract, as time may allow.

I will now briefly refer to the more important subjects that have been set down for our consideration.

(1) In no department of surgery has a more marked or more brilliant advance been made of late years than in that which concerns the operative treatment of intra-peritoneal tumours.

The establishment of ovariotomy as a recognised surgical operation has now long been matter of history; but the perfection of safety to which it has of late years been carried by the improvement of its details has led the way to a wide and rapid extension of operative surgery for the cure or relief of various diseased abdominal organs. The uterus and the spleen, the stomach, the pylorus, and the colon, have each and all been subjected to the scalpel of the surgeon, with what success has yet to be determined; and it is for you to decide whether some at least of these operations constitute real and solid advances in our art, or whether they are rather to be regarded as bold and skilful experiments on the endurance and reparative power of the human frame—whether, in fact, they are surgical triumphs or operative audacities. There must, indeed, be a limit to the progress of operative surgery in this direction. Are we at present in a position to define it? There cannot always be new fields for conquest by the knife; there must be portions of the human frame that will ever remain sacred from its intrusion, at least in the hands of the surgeon. May there not be some reason to fear lest the very perfection to which ovariotomy has been carried may lead to an over-sanguine expectation of the value and the safety of the abdominal section, and exploration when applied to the diagnosis or cure of diseases of other and very dissimilar organs, in which but little of ultimate advantage, and certainly much of immediate peril, may be expected from operative interference?

(2) In the discussion of the next great question I would submit that we may, with advantage, direct our attention less to the mere mechanical—the simple operative part of the business, the details of which are now well understood, than to the consideration of those higher questions as to the diagnosis and nature of the various forms of renal disease, in which nephrotomy and nephrectomy may be respectively used, with a reasonable hope of relief or cure. And in considering the prospects afforded by these operations in the improvement of the health and the mitigation of the sufferings of the patient, it is surely not the least interesting point for us to study the after physiological effects produced on the system by the extirpation of so important an eliminatory organ as the kidney.

(3) We naturally pass from the consideration of operations on the kidney to that of those which implicate the bladder; and in doing so we have specially to direct our attention to the question as to what advances have of late been made in lithotomy and lithotrity.

In lithotomy we see much of change, possibly something of novelty, but not so certainly anything of real progress. Have we indeed advanced one single step either in the perfection or in the results of that operation since the days of Cheselden, of Martineau, or of Crosse, not to mention the names of more recent but equally illustrious surgeons and successful operators? The revived median, the combination of it with lithotrity, the suprapubic, whether done antiseptically or not, have certainly not been very encouraging in their results, and can scarcely claim to be considered in the light of an advance on the old lateral operation in skilful hands. But yet we must admit that these methods of lithotomy may deserve this consideration—that possibly in some forms of calculus, and in certain conditions of the urinary organs, a wise eclecticism may be exercised in the choice of one or other of them.

In lithotrity, however, it is probable that a great and real advance has been made, and certainly it is undoubted that a complete revolution has been effected by the enterprise and skill of one of our American brethren, for it cannot be questioned that "Bigelow's operation" has completely changed the aspect of lithotrity, and there is every reason to believe that it constitutes one of those real advances in a method which marks an epoch not only in the history of the operation itself, but in the treatment of the disease to which it is applicable.

But here a fertile field opens up for our deliberations. We have to consider not only in what cases, as regards the mere size of calculus, "Bigelow's operation" may safely be used; but, also, and far more important than this, the ultimate result both upon the bladder and the kidney of prolonged intra-vesical instrumentation. The mere question

as to the comparative advantages of removal of stone by one or by several sittings is dwarfed by the more important one of determining the state of the bladder that results, not perhaps so much as concerns the life as the future comfort of the patient. It is here that information is much needed, and it is here that unfortunately, but for very obvious reasons, the lithotritist himself may in many cases be unable to furnish it.

(4) Prehistoric man was doubtless a victim of injury before he became the sufferer from disease, and the treatment of wounds constituted probably the first effort of the healing art. From the earliest dawn of human intelligence the attempt to cure a wound must have suggested itself to man, and yet at the close of the nineteenth century we are still discussing the best methods of doing this, and the causes of their failure. There is still difference of opinion and of practice amongst surgeons, not only as to the comparative advantages of the "open air" method, and that in which all atmospheric contact is carefully guarded against; of the "dry" and of the "moist" system of dressing; as to whether the "antiseptic method" in a modified form suffices, or whether the more elaborate system of local treatment before, during, and after an operation, which has been devised by the skill and worked out by the unwearied labour of Lister, be essential in all cases of operation wound. Not, of course, for its primary union—for this may be obtained by any and every of the methods mentioned. If it be contended that this system is necessary for the safety of the patient, and the due healing of the wound in some cases, has it been proved to be equally essential in traumatic lesions of all tissues, of all organs, and of all regions? These are questions that may well deserve the consideration of this section. But there are others of a yet wider character that must also engage our attention in any discussion on the best methods of securing primary union in wounds, for it is impossible to fail to recognise in the general constitutional state of the patient a most important factor in this direction; and we should be taking a narrow view of this many-sided question if we did not give due weight to the influence of those hygienic conditions which, if faulty are inimical, or even destructive to, the due performance of those actions which are necessary for the maintenance of the organism in a healthy state, and for the proper nutrition and consequent repair of the tissues of the body. Is there no fear that in some of the modern systems of treating wounds we are in danger of expending all our precautions in the prevention of the local and of ignoring the risk of a constitutional infection?

(5) The treatment of aneurism is one of those great questions which from an early period in the history of modern surgery has occupied the attention of practitioners, and has undergone no little fluctuation. A few years ago the battle between the ligature and compression appeared to have been decided in favour of the latter; but the invention of improved ligatures, made of various kinds of animal tissue, and applied with antiseptic precautions, has once more inclined the balance of professional opinion towards the Hunterian operation. But now again the practice of compression has received renewed strength from the employment of Esmarch's elastic bandage in the cure of certain forms of external aneurism, and it is for you to determine in what cases it can be used with advantage, and in what way a cure is effected by its means. For in the treatment of aneurisms, as in that of so many other surgical diseases, the wiser and more scientific course is to follow a judicious system of selection in the method to be employed in each particular case, rather than to subject all to one unbending line of practice.

(6) The treatment by resection of some forms of chronic and otherwise incurable joint diseases has in certain articulations, and at suitable ages, met with the universal approbation of surgeons, and the wide extension of the principles of "conservative surgery" is one of the most striking evidences of advance in our art in modern times. Resection has, however, of late years come to be extensively applied to the treatment of cases of articular disease which formerly were subjected to procedures of a less heroic character; and it will be for the members of this section to weigh carefully the wisdom of such a measure, and to contrast its results, both as regards life of patient and after utility of limb, with those which may be obtained from the employment of milder means, such as absolute immobility with extension, and possibly, in some cases, simple incision of the articulation.

(7) In considering the relations between adenoma, sarcoma, and carcinoma in the mammary gland of the female, I would venture to submit that this subject has to be discussed here from its clinical rather than from its pathological side. We have here less to do with the ultimate structure of the tumours, with their histological affinities, with the parts that are played by epiblasts and mesoblasts, with what epithelium or connective tissue cells can or cannot do, than with their clinical history, their differential diagnosis in their earlier stages, the best time for their removal by operation, the liability to recurrence after operation, and the possibility in recurrence of the substitution of one form of disease for another. With these, and such questions as these, we, as clinical surgeons, may advantageously occupy ourselves.

(8) The last subject set down for discussion is one that has practical bearings of an importance that cannot be overestimated. There are few questions of the present day of deeper surgical or social interest than the far-reaching, the apparently illimitable, and most pernicious extension of a syphilitic contamination of organs and of tissues, or the modifications impressed by it on other diseases that are the local developments of diatheses, whether strumous, tubercular, rheumatic, or gouty. Does the diathesis exercise any influence upon the form assumed by the syphilitic disease, and to what extent does it modify the characters presented by it in its primary and its secondary affections, more especially when the latter manifest themselves upon the skin or in the bones; how far are gummata and caries, psoriasis and rupia the consequences of a constitutional impress, influencing the direction of the syphilitic poison? To what extent may rickets and grey granulations be the ultimate products of the syphilitic taint? These and various other questions will probably occupy the attention of those who enter on the discussion of this wide-spreading subject.

We hope to be able to take the discussion of two questions on each day, so as to work through the eight in the time allotted to us. In addition to these there are various detached papers on subjects which are of much interest, but which scarcely admit of being classified under one or other of the above heads of discussion. These we shall take up as time and opportunity admit; but their number is so great that it is to be feared that full justice can scarcely be done to all, and that it will be unavoidable, on account of the limited time at our disposal, that a large number be read in abstract.

SECTION VI.—OBSTETRIC MEDICINE AND SURGERY.

ADDRESS

BY

ALFRED H. M'CLINTOCK, M.D., LL.D.,
PRESIDENT OF THE SECTION.

GENTLEMEN,—In opening the obstetric section of this seventh International Medical Congress, the first and most gratifying duty that devolves upon your President is to offer an earnest and hearty welcome to those obstetric members who have come from other nationalities, and from distant British colonies, to take part in this, the largest convention of medical men that has ever, perhaps, assembled together at any one time or place.

I present this cordial salutation, not only on the part of the officers and Council of the particular section over which I have the honour to preside, but also on the part of the obstetricians and gynæcologists of England, Scotland, and Ireland.

We are proud and happy to meet here on British ground so many of our brethren from various parts of the civilised world, but especially from Germany, France, and America, and to accord them a friendly greeting, not only out of respect to their individual merits and high reputation, but as representing those great obstetric schools over which the names of Mauriceau, Levret, Baudelocque, and Dubois; of Roederer, Siebold, Naegele, Kiwisch, and Scanzoni; and of Bard, Dewees, Meigs, and Hodge, have severally shed such imperishable lustre.

Not the least of the important objects contemplated in this Congress is the interchange of friendly feelings among

its members. I am fully persuaded that our reunions will be attended, not alone with benefit to us all by the attrition of mind with mind, but that new friendships will be formed, and old friendships confirmed, and that sentiments of mutual respect and regard will be developed, so as to strengthen the bond of brotherhood which should unite us as fellow-workers in the same department of medicine.

Allow me before going further to express my deep sense of the unexpected, unmerited dignity which the Congress has conferred by putting me into the position of President of this important section; I feel it to be the highest and most flattering honour of my long professional life. Such a compliment more than repays one for forty years of labour and devotion; for it sets the seal of approval by contemporaries on my past life, and leaves nothing further or higher to aspire to in the way of professional distinction. At the same time, gentlemen, this feeling of just pride and exaltation is mingled with a very poignant sense of incapacity, and I might well shrink from the responsibility of the post, but that in the discharge of its duties I shall have the aid and co-operation of such accomplished men as those who constitute the Vice-Presidents and Council of the section; they, in truth, are the giants on whose shoulders I am raised to the exalted position it is my good fortune to occupy in this Congress.

Inasmuch as this is the first occasion of the International Medical Congress meeting in London, it may not be inappropriate if I pass in review some of the more prominent among the many eminent obstetricians who lived and practised in this city, who, by their writings, teaching, and discoveries, have contributed in no small measure to the development of midwifery and gynæcology, as well as to the medico-chirurgical fame of London.

I must, however, study brevity, being desirous, if possible, to keep within the fifteen minutes allowed for the readings of communications, so as to set an example of obedience to the rules of the Congress.

In this retrospective glance, I find only one name standing out in the sixteenth century:—"Thomas Raynald, the translator of Eucarius Rhodion's celebrated treatise "De partu Hominis." The original English edition, by Raynald, appeared about 1540, and was the first distinct treatise on midwifery in the English language, and for over 100 years was the sole guide and text-book of obstetric practitioners, male and female.

In the early part of the seventeenth century, the immortal William Harvey (*tanto nomini nullum par eulogium*) stands forth conspicuous, the splendour of his fame increasing as years roll on. He spent most of his time here, being physician to the king; and he delivered courses of lectures, at the Royal College of Physicians, on anatomy and surgery. As a practitioner we know from the testimony of his contemporaries that Harvey excelled in midwifery and in the treatment of female diseases.

Before the publication of his celebrated exercitations on generation, parturition, conception, &c., there were, according to Dr. Aveling, "but three works on midwifery in our language; these were translations from Rhodion, Rueff, and Guillemeau. His was the first book on midwifery written by an Englishman, printed in our own language, and the influence which it had upon the practice of the time would with difficulty now be estimated. His claim therefore to eminence in our department of medicine is beyond question." With this conviction on our minds, we shall the more heartily yield our applause when his magnificent memorial statue is unveiled at Folkestone, the place of his nativity, on Saturday next—a ceremony, I may remark, which has with good taste and judgment been purposely so arranged that this great Medical Congress may take a part in showing honour and respect to the memory of one of the greatest discoverers in the science of medicine, and, consequently, one of the greatest benefactors to the human race.

Contemporary with Harvey was another remarkable man, Peter Chamberlen, the inventor of the midwifery forceps, indisputably the most valuable instrument of the whole *armamentarium chirurgicum*. Unfortunately for him, however, the brilliancy of his reputation is obscured by the unworthy selfish conduct which caused him to keep the instrument a secret for the aggrandisement of himself and family. He was father of Dr. Hugh Chamberlen, the translator into English of Mauriceau's works. There is a handsome monument to the memory of this Dr. Hugh Chamberlen in Westminster Abbey, erected by his patron and friend the Duke of Buckingham. No less than five generations of the Chamberlen family were eminent in the medical profession here; and Dr. Peter, who attained a great age, had been physician to five English sovereigns.

Towards the close of this (seventeenth) century, Richard Wiseman, "Serjeant-Chirurgeon" to Charles I., published his treatise on Surgery, in which he gives an excellent description of pelvic abscesses, consequent on parturition. He thus anticipated Puzos' essay on the same disease, and put forward much more rational and correct views as to its pathology. The eighteenth century was destined to see a marvellous development of midwifery, as well as of many other arts and sciences. As might therefore be expected, London can boast of several eminent obstetricians at this period.

In chronological order, the first to be mentioned is Dr. John Arbuthnot, F.R.S. and F.R.C.P., physician to Queen Anne. Although he has left no enduring evidence of obstetric superiority, yet he was an eminent accoucheur in his day, and reflected infinite credit on our order by his rare literary talents, his deep scholarship, and his exalted social position. He was skilled in everything that related to science, and held a prominent place among the ablest writers and wits of that Augustan age: one of whom (Swift or Pope) alludes in his poetry to

"Arbuthnot's soft obstetric hand."

A man who was considered a friend and an equal by Parnell, Gay, Bolingbroke, Swift, and Pope could not fail to adorn any pursuit to which he devoted his vast intellectual powers. Speaking of him, Swift said, "He has more wit than we all, and his humanity is equal to his wit." A higher tribute could not have been paid him.

The next to be mentioned is Dr. John Maubray, not on account of any peculiar merit in either of his works, "The Female Physitian," and "Midwifery Brought to Perfection," but because he is reputed to have been the first public teacher of midwifery in this country. He lectured, Dr. Denman tells us, at his house in Bond-street, so far back as the year 1724.

Nearly contemporary with Maubray was Dr. Edmund Chapman. He was the second public teacher of midwifery in this city, and is entitled to our lasting gratitude for having been the first to publish to the world a description of that "noble instrument" (to use his own phrase), the obstetric forceps, the secret of which the Chamberlens kept to themselves for over fifty years. This he did in the "Edinburgh Medical Essays," and subsequently in his treatise "On the Improvement of Midwifery chiefly with regard to the Operation:" the operation meaning the application of the forceps. The first edition of this book came out in 1733.

About this same period also lived Sir Richard Manningham, F.R.S., a man of considerable learning and of great reputation as a successful midwifery practitioner. He was author of some obstetric works of temporary consequence, and his claim to remembrance arises from the circumstance that in the year 1739 he opened a ward in the Parochial Infirmary of St. James, Westminster, exclusively for the reception of parturient women, which was the first thing of the kind in Great Britain. Shortly afterwards the idea was taken up and enlarged upon elsewhere, and the Great Lying-in Hospital of Dublin was founded by Dr. Bartholomew Mosse, being the first hospital of the kind in the British dominions.

The very same year that Sir Richard Manningham opened his obstetric ward in St. James's Infirmary, as we have just seen, a surgeon from a small country town in Scotland established himself here in London as an accoucheur, who ultimately effected the greatest reformation that had yet taken place in the principles and practice of obstetrics. This man was William Smellie, a name always to be respected wherever midwifery is cultivated as a science. For twenty years Smellie practised and taught here; and published the first volume of his celebrated treatise in 1751, and his splendid anatomical plates in 1754. Amongst his pupils who later on became eminent in the same branch of medicine were William Hunter, Denman, David McBride (of Dublin), John George Roederer (subsequently Professor of Midwifery at Göttingen), Dr. James Lloyd of Boston, U.S., and Dr. William Shippen, afterwards Professor of Midwifery in the Pennsylvanian University; these last being, according to Professor Parvin, "the two first American obstetric practitioners." Most gladly would I linger over the life and works of this great man, but I must content myself with a few sentences.

Smellie possessed a wonderful capacity for work, and a clear judgment; but beyond and above this he was endowed with a singularly accurate perception of facts, which made him a correct as well as a close observer of Nature. Herein lay the secret of his unrivalled success as a reformer and improver of midwifery. He himself felt this to be so, for, in reviewing his practice, he says, "I diligently attended to the course and operations of Nature which occurred in my practice, regulating and improving myself by that infallible standard." (Case 186, Sydenham Society Edition.) Truly, he was, in the words of Dr. Hugh Miller, a "noble character and an example of earnest living."

A couple of years after Smellie settled in London there came to live with him a young man from the Scottish county —Lanarkshire—of which Smellie himself was a native. This young man was no less a person than William Hunter —a name familiar to you all—whose plates and descriptions of the human gravid uterus have gained their author a foremost rank among obstetric writers. By his great reputation as a lecturer and as an anatomist, aided no doubt by his prepossessing appearance, polished manners, and cultivated mind, Hunter proved a successful competitor of Smellie's in practice. Like him, he also gave special courses of lectures on midwifery; MS. notes of which are to be found in many libraries. Dr. Matthews Duncan tells us the College of Physicians possesses two pretty complete volumes of such notes.

In 1748 Hunter was appointed surgeon and man-midwife to Middlesex Hospital, and soon afterwards to the British Lying-in Hospital; for though the physicians claim him as belonging to themselves, yet it cannot be disputed that Hunter was a surgeon and member of the Corporation of Surgeons of this city.

Besides being a rival, he was in some respects a contrast to Smellie. The school of obstetrics founded by the latter was not inaptly described by the late Tyler Smith as the mechanical school, from the importance it attached to the resources of art in aiding parturition. Hunter, on the other hand, placed extraordinary reliance on the powers of Nature, and trusted too much to tincture of time. Hence his followers have been designated the physiological school; and through the influence of his commanding authority they formed a large section of the profession, and could boast some great names.

Although we may regard Hunter as one of ourselves, and appropriate much of the glory with which his name is invested, "yet it is necessary," as Dr. Duncan observes, "with a view to justice to point out that his obstetrical fame is chiefly anatomical, and that his greatest claim on our admiration and gratitude arises from his anatomical work and influence" (Harveian Address, 1876).

It is a just boast of the English school of midwifery that what, in the truest and strictest sense, is "the most conservative of all the resources of our art" was first formally admitted a place among obstetric operations in this city and about the year 1756. The recognition by the profession of the artificial induction of premature labour was the outcome of a medical conference held at the time and place just mentioned. Who was the first or most strenuous advocate of the operation at that conference does not appear; but we do know that the first to put it in practice was Dr. Macaulay, a midwifery practitioner of this city. It is natural and just, therefore, to identify his name with this most beneficent measure, and to accord him a prominent place among the many distinguished accoucheurs who lived and practised here.

One of the greatest ornaments of that physiological school of accoucheurs—founded we may say by William Hunter—was Thomas Denman, a man of remarkably sound judgment, great prudence, and of the highest moral integrity. Throughout half a century he lectured and practised in this city. His work, entitled "An Introduction to the Practice of Midwifery," is well known to most of you. It has many peculiar excellences, but to my mind the chief is his classification of labour, which is at once comprehensive, pathological, and practical, and thereby serves the highest purposes of any system of classification.

Did time permit, I could multiply these brief sketches so as to include many other London obstetricians who lived since the commencement of the present century, of less note, it is true, but yet men who stood far above mediocrity, and who, by their writings, their teaching, and their practice, materially aided the advancement of midwifery and gynæcology. I must content myself, however, with a mere recital of their honoured names—viz., John Clarke, Osborne, Leake, Bland, Merriman, Charles Clarke, Gooch, David Davis, Blundell, John Ramsbotham, Marshall Hall, Robert Lee, Robert Ferguson, Rigby, jun., Francis Ramsbotham, Granville, Ashwell, Lever, Locock, Waller, Murphy, Tyler Smith, Oldham.

These men all lived so near our own times (at least, those of us who, like myself, have reached the grand climacteric) that the bare mention of their names at once recalls the titles and the nature of their respective contributions to the funded capital of our professional knowledge.

Of the living obstetric celebrities, who make this city the scene of their work and their influence, I purposely refrain from speaking:—

> "My thoughts are with the dead; with them
> I live in long past years,
> Their virtues love, their faults condemn,
> Partake their hopes and fears;
> And from their lessons seek and find
> Instruction with an humble mind."—SOUTHEY.

But to a more worthy occupant of this chair at some future meeting of the Congress, after we have played our little parts in life's drama, I bequeath the grateful, pleasing task of supplementing the above list with the names of those eminent London obstetricians and gynæcologists whom to meet and to know is assuredly the most gratifying of the many privileges connected with this great international gathering.

SECTION VII.—DISEASES OF CHILDREN.

ADDRESS

BY

CHARLES WEST, M.D.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—My first duty in taking this chair is a most pleasant one. It is to express my deep sense of the honour done me by my countrymen when they selected me as not unworthy to represent that department of medicine in England which we all assembled here more especially cultivate. The honour, too, was enhanced by the fact that at the time when it was conferred I was on the point of leaving London in search of what I am thankful to say I found, perfect health, in a land of constant sunshine. That I have found there, too, a second home, I owe it to the kindness of my French friends who received me so cordially and treated me so graciously. You did not regard me as a stranger, but as a fellow member of that great Société Internationale which has for its object, not the upsetting of thrones, nor the changing of governments in quest of some grand social regeneration to be accomplished in a few days by violence and bloodshed, but the improvement of mankind by gentle means. The one, like the thunderstorm and the torrent, does but lay waste; the other is like the silent dew, which falls unseen and fertilises the land.

But while I thank you most heartily for all your goodness to me in what I may now call my adopted country, you will, I am sure, find it but natural that I rejoice in returning once more to my native land; in seeing again the old familiar faces, and in revisiting the spots where I studied as a youth, or where I laboured as a grown man.

> "Cœlum, non animam mutant
> Qui trans mare currunt":

and my French sympathies are not one jot lessened because I still feel myself altogether an Englishman.

With these words, gentlemen, I should have wished to stop, and to have invited you to pass at once to the business for which we are met. Some three weeks ago, however, I learned to my dismay that the Executive Committee desired that the President of each Section should open its meetings by a short address bearing on its special objects. Far away from my books, moving each day from place to place, I felt my utter inability to do anything worthy of the occasion. Moreover, there came to my recollection an anecdote which did not help to cheer me. Dr. Johnson and his friend Boswell dined one day with a gentleman by special invitation. The next day Johnson complained to his friend of the meagreness of the entertainment. "Well, Sir," said Boswell, "but it was a good dinner." "Yes," replied Johnson, "a good enough dinner, but it was not a dinner to ask a man to." And so, if you should find now scanty and commonplace

what I say is, pray remember, gentlemen, the entertainment is not one which, had I been left to myself, I should have thought good enough to ask you to.

One accusation which I have heard brought against a meeting like the present is that it is apt to resolve itself into a mutual admiration society, each member praising what the other has done, all joining to extol what their own generation has accomplished, and that the gratification of personal vanities rather than the promotion of science is the chief outcome of the whole. But just as travellers on a long journey halt from time to time, and looking back on the road they have traversed, take courage to go further, so may we, with no feeling of undue self-gratulation, rejoice over what has been accomplished even in our own day, as an earnest and a pledge of future progress, an inducement to more unwearied effort. Thirty years ago, throughout the whole of England and America, there was not a single hospital set apart for children. It was but rarely that one saw them, little waifs and strays, in the wards of our general hospitals, for the maxim "De minimis non curat lex" held good in medicine as in law. Germany too was in but little better case, and one was forced to go to Paris to study on a large scale those diseases which men like Guersent, and Blache, and Baron, and Trousseau and Rogers investigated with untiring zeal, and, in spite of hospital arrangements, most painfully defective, strove to cure. We all know how this is altered now. In London there are six separate children's hospitals; each, I believe, with its convalescent branch, and children's wards are to be found in every one of the large London hospitals. There are special children's hospitals in every large town in England. America and Germany have followed the same example, and almost everywhere throughout Europe the opportunities for the study of the diseases of children are almost as numerous as for the diseases of the adults.

Nor has this wide field been without abundant husbandmen to till it, and we may count with satisfaction the fruits of their labours.

The vague phraseology which served for years to conceal our ignorance even from ourselves has been to a great degree done away with. We talk no longer of worm fever, remittent fever, gastric fever, and so on; for under these various names we recognise the one disease, typhoid fever, varying in severity but marked always by its own characteristic symptoms. Half a page in a hand-book was all that was to be found, thirty years ago, concerning heart disease in childhood; while at the present day the frequency of heart disease has been fully recognised, and it has been studied with as minute a care in the child as in the adult. The various inflammations of the respiratory organs are no longer looked on as a whole, but each is referred to its proper class, and we distinguish lobar and lobular pneumonia, bronchitis, and capillary bronchitis, and assign to each its proper place and its characteristic symptoms. Nor have our therapeutics lagged behind. I remember the hesitation with which some years ago my dear friend and master, the late Dr. Latham, decided on tapping the chest of a boy eight years of age, who was received into St. Bartholomew's Hospital on account of a pleurisy which had terminated in empyema; and the delight, the wonderment almost, with which we regarded the successful issue of the operation in a child so young. A few months ago I communicated to the Medical Society of Nice the particulars of fifty cases in my own practice where paracentesis of the chest had been performed at my desire, and several of you, gentlemen, could relate as many cases as mine. That once almost unrecognised disease diphtheria has been studied with the greatest care, its relation to membranous croup has been investigated; the close connexion of the two has been demonstrated. I for my part should not hesitate to say their absolute identity has been established. Much light has been thrown on the various diseases of the nervous system. That once enigmatical affection, the so-called essential paralysis of infancy and childhood, has been shown (in the first instance by the researches of my friend, Mr. Roget, and his able coadjutor, M. Damaschino) to be due to an acute inflammatory softening of the grey matter of the anterior columns of the spinal cord; and twenty-five recorded observations since that time attest the truth of their discovery. Though strictly speaking, perhaps, not a disease of the nervous system, the pseudo-hypertrophic muscular paralysis of Duchenne claims mention here as a new and important addition to our knowledge of the pathology of early life.

I fear to weary you by further enumeration, else it would not be difficult to increase largely the instances of new and most important knowledge added to our stores since my student days. In estimating the value of their gains, too, it must not be forgotten that each truth established means an error exploded; so much base metal, so much counterfeit coin withdrawn from circulation, or, to put it differently, so much sterling gold substituted for inconvertible paper money. In this progress surgery has everywhere borne a large part. The treatment of hip disease, the excision of scrofulous joints, the new modes of treatment of spinal curvature—some, indeed, still on their trial—the operation for the cure of genu valgum, which one cannot mention without a fresh tribute of thanks to Joseph Lister, who in this instance has rendered a proceeding safe and salutary, from which but a few years since the common sense of the surgeon would have recoiled, are so many fresh instances of progress made during a period of little more than the half of my professional life. I take it, however, that the great use of meetings such as the present is to take stock, far less of what we know than of what we do not know, or know at best but imperfectly. A few of these problems have been submitted to you in the list of subjects for discussion. Because it is probable that the combined experience of so many and such distinguished men as are here present may furnish definite and conclusive answers. Other questions are introduced in the hope of gaining fresh information on points concerning which our knowledge is fragmentary; while there are many other problems still unsolved, on which it is hoped that fresh light will be thrown during the time of our meeting here.

And now, with your permission, I will conclude with an old apologue, which tells how when the fabled Arabian bird renewed each hundred years its vigour and eternal youth, the birds of the air all helped to build its nest. The eagle and the wren contributed alike to this labour of love and duty; each brought what he could, nor ceased till the task was done. And surely science and art, especially our science and art, are old and new, renewing day by day, burning by a voluntary self-cremation old theories, half facts, hasty conclusions, and substituting more accurate observations, truer inferences, more solid judgments. To this great end we may all do something; but labour as we may our task will never be finished, for not once in a hundred years, as the fable runs, but every day and all day long, the process goes on—a daily death, a daily renewal, as in our body's growth—a death of error, a development of truth.

SECTION VIII.—MENTAL DISEASES.

ADDRESS

BY

C. LOCKHART ROBERTSON, M.D. CANTAB., F.R.C.P.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—In now opening the eighth section of this great International Medical Congress, and in offering to the alienists of Europe and America our cordial welcome to London, I must ask leave to explain to you that it is only by the accident of official position as senior physician to the Lord Chancellor, who, under the Royal prerogative, has in England the guardianship of all lunatics and persons of unsound mind, that I occupy to-day this presidential chair. But for the desire of the Executive Committee thus to recognise the paramount authority of the Lord Chancellor in our department of medicine, I cannot doubt that the place I now fill would have been allotted to our most distinguished English writer on lunacy, Dr. J. C. Bucknill, one of the vice-presidents of this Congress, whose writings and whose name are a household word in all the asylums where the English tongue is spoken. Called from my official position rather than on personal fitness to preside in this section, I may the more venture to ask at your hands a generous interpretation of my efforts, so to guide your deliberations here that they may advance the science and practice of this department of medicine in which we are all enrolled.

I think I shall best use this occasion by laying before you a brief statement of the present condition of the insane in

England and of the manner and method of their care and treatment. In the German tongue the word *Irren-Wesen* exactly expresses the subject of this address.

The number of the insane in England of whom we have official cognisance is about 71,000, being in the ratio of 27·9 per 10,000, or 1 in 350, of the population. Of these no less than 63,500 are paupers chargeable to the rates and maintained at the cost of the community. The remaining 7600 are private patients, whose means vary from £50 to £50,000 a year, much the larger number being nearer £50, for insanity necessarily tends by arresting the power of production to the impoverishment of its subjects. Thus, of the total of the insane in England, 90 per cent. are paupers maintained at the public cost, and 10 per cent. only are kept by their own resources.

There has since the passing of the Lunacy Act of 1845 been a great yearly increase in the registered numbers of the insane, an increase chiefly if not solely among the pauper class, which admits of satisfactory explanation, as I have elsewhere[1] endeavoured to show, without accepting the popular fallacy of an increase of insanity; a theory which, if carried to its logical conclusion, leads us to the result that as the registered lunatics in 1845 were as 1 to 800 of the population, while in 1880 they stand, as I have just stated, as 1 to 350, therefore lunacy in England has more than doubled during the last thirty years, which is a manifest fallacy. I only regret that my present limits preclude farther reference to this interesting problem.[2]

I have prepared a Table which exhibits the number of the insane in England, with their place of residence and their proportion to the population in the decenniums 1860, 1870, and 1880. This table shows that the total registered number of the insane has risen from 38,000 in 1860, to 71,000 in 1880, and the ratio to the population from 19·1 per 10,000 to 27·9. It is evident from my figures that this increase is mainly in the pauper class. The private patients in 1860 numbered 5000, in 1880 they were 7500, and their ratio to the population 2·5 and 2·9 respectively, an increase of ·4 only as compared with the increase of 8·8 among the pauper lunatics on each 10,000 of the population.

Table I. gives the distribution per cent. of the 71,000 registered lunatics in England and Wales, and I have here contrasted the same with that of the 10,000 lunatics registered in Scotland.

TABLE I. — *Showing the Distribution per cent. of all Lunatics in England and Wales and in Scotland in 1880 (January 1st).*

	Distribution per Cent.					
	In England and Wales.			In Scotland.		
	Private.	Pauper.	Total.	Private.	Pauper.	Total.
In Public Asylums*	5·0	58·5	61·5	14·6	61·0	75·6
In Private Asylums†	5·0	1·5	6·5	1·6	None	1·6
In Workhouses‡ ..	None	23·0	23·0	None	7·0	7·0
In Private Dwellings§	3	3·5	9·0	1·1	14·7	15·8
Total	—	—	100	—	—	100

* Including County and District Asylums and Scotch Parochial asylums, lunatic hospitals and Scotch chartered asylums, naval, military, and East India asylums, Idiot asylums, Broadmoor Criminal Asylum, and Perth Prison wards.
† Including provincial and metropolitan licensed houses.
‡ Including the metropolitan district asylums.
§ Including 208 Chancery lunatics residing in the private houses of "the committee of the person."

Table I. is interesting as contrasting the total distribution of lunacy in England with that of Scotland. In England 61·5 per cent. of the lunacy of the country is maintained in the public asylums. In Scotland it reaches 75·6 per cent., while on the other hand the proportion of patients in private asylums is 6·5 per cent. in England as against 1·6 in Scotland. In England 9 per cent. only of all lunatics are placed for care in private dwellings; in Scotland the proportion rises to 15·8. In England we have 23 per cent. in workhouses; in Scotland there are only 7 per cent.

Table II. gives the relative distribution per cent. of private and pauper lunatics respectively in England and Wales, and in Scotland.

TABLE II.—*Showing the Distribution per cent. on their several Numbers of the Private and Pauper Lunatics respectively in England and Wales and in Scotland in 1880.*

Where Maintained.	Distribution per Cent.			
	In England and Wales.		In Scotland.	
	Private.	Pauper.	Private.	Pauper.
In Public Asylums . . .	49·0	63·0	84·0	73·7
In Private Asylums . . .	43·0	1·6	9·5	None
In Workhouses	None	26·0	None	8·5
In Private Dwellings . . .	8·0	9·4	6·5	17·8
Total	100	100	100	100

Table II. brings strikingly before us the existing difference in the method of care and treatment of the insane in the two kingdoms. In England 43 per cent. of the private patients are in private asylums, while in Scotland the proportion is 9·5 only. The public asylums, on the other hand, have 84 of the Scotch private patients under treatment as against 49 in England. In England, owing to the traditional preference of the Court of Chancery for private dwellings for the care of its wards, we find the proportion of patients so placed stands as 8 to 6·5 in Scotland, while with pauper lunatics these figures are reversed, the proportion in England being 9·4 as contrasted with 17·8 in Scotland.

I. PUBLIC ASYLUMS.

There are 43,700 patients in the public asylums of England, or 61·5 per cent. of the whole lunacy of the country. Of these 40,000 are pauper lunatics, and 3700 are private patients. The former are maintained in the county and borough asylums, the latter are divided between these and the registered lunatic hospitals.

(*a*) *County and Borough Asylums.* — The county and borough asylums of England,[3] sixty in number, contain 40,000 beds, varying from 2000 to 250. They have been built and are administered under the provisions of the Lunacy Act of 1845. The average cost per bed has been under £200; the weekly maintenance of each patient is 10*s.*, to which must be added the interest on the cost of construction and the yearly repairs of the asylum, which are borne by the county rate, bringing the yearly cost for each pauper lunatic maintained in the county asylums to nearly £40.

The government of the English county asylums is entrusted, by the Lunacy Act, 1845, to a committee of the justices of the peace, under the control of the Secretary of State for the Home Department. The administration is in the hands of the resident medical superintendent. A yearly inspection of the asylum is made by the Commissioners in Lunacy, and a yearly medical and financial report is presented by the committee and medical superintendent to the quarter sessions, and published.

The proportion of cures (discharged recovered) in the

[1] The alleged Increase of Lunacy. Journal of Mental Science, April, 1879. A Farther Note on the alleged Increase of Lunacy, Journal of Mental Science, January, 1871.

[2] In the Report of the Scotch Commissioners in Lunacy for 1880, this question of the apparent increase of insanity is ably discussed, and dealt with in a careful statistical inquiry. I can only here give their conclusion:—"We have frequently pointed out that the difference in these rates of increase is not necessarily due to an increasing amount of mental disease, but is probably due in a large measure to what is only an increasing readiness to place persons as lunatics in establishments."

[3] A return was ordered by the House of Commons to be printed Aug. 14th, 1878, of the cost of construction of each of the county asylums, the number of beds, the annual and weekly maintenance rate, the percentage of recoveries, deaths, &c. Unfortunately it has been, as regards England, carelessly prepared, and no abstract or summary of its contents or averages are given. It is impossible to make out clearly in which asylums the yearly repairs are included in the total cost of construction and in which they are omitted. The quarter sessions of Warwickshire have made no return at all! In contrast, in the same Parliamentary paper, stand the clear tables and summary relating to the public asylums of Scotland. From the English return we can only gather an approximate estimate of the cost of construction, amount of land, salaries, cures, &c., no averages being given.

county and borough asylums in the last decennium, 1870-80, was 40·28 per cent. on the admissions, and the mortality 10·59 on the mean population. In Scotland, during the same period, the recoveries were 41·6, and the deaths 8. The only private patients admissible under the statute are those bordering on pauperism, and whom the law requires, as to classification and diet, clothing, &c., to be treated as the paupers. Herein the English county asylums differ from those on the continent of Europe and in America, where alike, and I think most wisely, special and often excellent provision exists for the care and treatment of private patients. At the public asylums near Rouen, at Rome, at Münich, and at Utica, in the States, I have seen extremely good accommodation provided for private patients.

In Mr. Dillwyn's Lunacy Law Amendment Bill, 1881, which was read a second time on the 25th of May, but has since been withdrawn for this session, there was a clause, section 4, enabling the visitors of county asylums to provide there suitable accommodation, by additional buildings or otherwise, for private patients. I regard this proposal as one of the most important reforms, since the Lunacy Act of 1845, in the treatment of the insane of the middle class, providing as it would for the small ratepayers, at a cost within their means, such care and treatment as they cannot obtain in the cheaper private asylums, where the accommodation and comfort are absolutely below that of the paupers in county asylums, not to refer to the superior acquirements of the medical superintendents of the latter.

I do not feel called upon from this chair (nor does time admit) to enforce and illustrate the now incontestable superiority of public asylums, even in a financial point, for the curative treatment of the insane poor as contrasted with the private licensed houses, to which before the Act of 1845 they were farmed out by their respective parishes. "Our present business is to affirm that poor lunatics ought to be maintained at the public charge. I entertain myself a very decided opinion that none of any class should be received for profit; but all I hope will agree that paupers, at any rate, should not be the objects of financial speculation." These words, spoken by Lord Shaftesbury in the House of Commons when he introduced the Lunacy Act of 1845 (the Magna Charta of the insane poor), settled this question once for all. Whose voice will speak similar words of comfort and healing to the insane of the upper and middle classes and declare with authority which shall no longer be questioned, "that all insane captives whose freedom would not be dangerous should be liberated, and those who remain be surrounded with every safeguard of disinterestedness, humanity, and public responsibility?"

In here recording the success which has attended the Act of 1845—a success that led my friend Dr. Paget in his Harveian Oration to call the sight of one of our English county asylums "the most blessed manifestation of true civilisation that the world can present,"—I cannot refrain from adding a word of tribute to the memory of my revered friend John Conolly, whose work of freeing the insane from mechanical restraint, and of thereby founding our English school of psychological medicine, preceded the legislation promoted by the Earl of Shaftesbury, and ensured the success of these enactments.[4]

Dr. Conolly's four annual reports of the County Lunatic Asylum at Hanwell for 1839, '40, '41, '42, still form the groundwork of our treatment of the insane poor in the English county asylums, while these asylums themselves—whose fame, I may be permitted to say, based as it is on the successful application of the English non-restraint system, has gone forth into the whole civilised world, and brought rescue to the most suffering and degraded of our race—stand throughout this fair land imperishable monuments of the statesman to whom they owe their origin, and of the physician who asserted the great principle on which the treatment within their walls is founded.

"The system as now established," he writes, "will form no unimportant chapter in the history of medicine in relation to disorders of the mind. It has been carried into practical effect in an intellectual and practical age, unostentatiously, gradually, and carefully, and is, I trust, destined to endure as long as science continues to be pursued with a love of truth and a regard for the welfare of man."[5]

We have made arrangements whereby you will have the opportunity of visiting and inspecting two of the best of the English county asylums, that for Sussex at Hayward's Heath, and for Surrey at Brookwood, as also the four great metropolitan asylums, with a joint population of 6600 lunatics, at Hanwell, Colney Hatch, Banstead, and Wandsworth. There has since the Lunacy Act of 1845 been a steady increase in the number of pauper lunatics placed in the county asylums. In 1860 the proportion was 57 per cent., in 1870 it rose to 61 per cent., and in 1880 it was nearly 65 per cent. of their number. I think this continued increase is most injurious alike to the insane poor and to the due administration of the county asylums. The accumulation in such large numbers of harmless and incurable lunatics in these costly asylums is, moreover, a needless burden on the rates.

I think we may now, with an experience of thirty-five years, assert that the utmost limits within which the county asylum can benefit or is needed for the treatment of the insane poor is 50 per cent. of their number,[6] and that a further accumulation of lunatics there serves no practical purpose, and hence is an unjustifiable waste of public money. The workhouses contain 16,500 pauper lunatics, or 26 per cent. of their number. A recent statute facilitates the adaptation of wards in the county workhouses[7] for the reception of lunatics; and if these arrangements were properly carried out, I think another 14 per cent., or 40 per cent. of the incurable and harmless pauper lunatics and idiots, might be provided for in the workhouses. That this is no fancy estimate I may quote the parish of Brighton, long distinguished for its wise and liberal administration of the Poor-law, which has already 36 per cent. of its insane poor in the workhouse wards, and 55 per cent. only in the county asylum. The transfer of twenty chronic cases—no impossible feat—from Hayward's Heath to the Brighton workhouse wards would at once bring the Brighton statistics up to my ideal standard for the distribution of pauper lunatics — viz., in county asylums, 50 per cent.; in workhouse wards, 40 per cent.; leaving 10 per cent. for care in private dwellings.

(b) *Lunatic Hospitals (Middle-class Public Asylums).*—Besides the county asylums for the insane poor we have in England fifteen lunatic hospitals, including the idiot asylums at Earlswood and Lancaster, where the principle of hospital treatment followed in the county asylums is applied to the insane of the upper and middle class with the most satisfactory results.

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[4] "In June, 1839, Dr. Conolly was appointed resident physician at Hanwell. In September he had abolished all mechanical restraints. The experiment was a trying one, for this great asylum contained 800 patients. But the experiment was successful; and continued experience proved incontestably that in a well-ordered asylum the use even of the strait-waistcoat might be entirely discarded. Dr. Conolly went further than this. He maintained that such restraints are in all cases positively injurious, that their use is utterly inconsistent with a good system of treatment; and that, on the contrary, the absence of all such restraints is naturally and necessarily associated with treatment such as that of lunatics ought to be, one which substitutes mental for bodily control, and is governed in all its details by the purpose of preventing mental excitement, or of soothing it before it bursts out into violence. He urged this with feeling and persuasive eloquence, and gave in proof of it the results of his own experiment at Hanwell. For, from the time that all mechanical restraints were abolished, the occurrence of frantic behaviour among the lunatics became less and less frequent. Thus did the experiments of Charlesworth and Conolly confirm the principles of treatment inaugurated by Daquin and Pinel; and prove that the best guide to the treatment of lunatics is to be found in the dictates of an enlightened and refined benevolence. And so the progress of science, by way of experiment, has led men to rules of practice nearer and nearer to the teachings of Christianity. To my eyes a pauper lunatic asylum, such as may now be seen in our English counties, with its pleasant grounds, its airy and cleanly wards, its many comforts, and wise and kindly superintendence, provided for those whose lot it is to bear the double burden of poverty and mental derangement—I say this sight is to me the most blessed manifestation of true civilisation that the world can present."—The Harveian Oration, 1866, by George E. Paget, M.D., Cantab. Regius Professor of Medicine in the University of Cambridge.

[5] The Treatment of the Insane without Mechanical Restraint, by John Conolly, M.D. Edin., D.C.L. London: Smith, Elder, & Co. 1856.

[6] There is a unanimous concurrence of opinion on the part of the Lunacy officials and the Visiting Justices that the grant from the Consolidated Fund of 4s. a week made by Lord Beaconsfield's Government in 1874 for every pauper lunatic detained in the county asylums has led to a needless increase in the admission there of aged lunatics and idiot children, who were and can with equal facility be kept in the workhouses. This grant has risen year by year, and in the estimates of 1881-82 is placed at £425,000. Instead of relieving the landed interest, as this ill-considered attempt to shift part of their burden on the fundholders was intended, it has actually increased the county rate by the forced enlargements and extension of the county asylums. The editor of *The Times* in 1874 and 1878 allowed me at some length to direct attention to this yearly increasing misdirection of the public funds. It is to be hoped that when the heavy local taxation of England is readjusted, this outlet of wasteful expenditure may not be overlooked.

[7] The success of the metropolitan district asylums at Leavesden, Caterham, and Darenth, which contain 4470 chronic lunatics maintained at the rate of 7s. a week, shows how even in so difficult a place as London the treatment of chronic and harmless pauper lunatics in workhouse wards is to be accomplished, with a large saving to the ratepayers and a relief to the crowded wards of the county asylums, which are thus made available for the curative treatment of acute and recent cases.

The following Table gives a list of these asylums, with the date of their foundation, their present accommodation (number of beds) and their average weekly cost of maintenance.

TABLE III. — *The Registered Lunatic Hospitals (Middle-class Asylums) in England, with the Date of their Foundation, the Number of Beds, and the Average Weekly Cost of Maintenance in 1880.*

Name and Site of Asylum. (Registered Hospital.)	Date of Foundation.	Number of Beds.	Average Weekly Cost.* £	s.	d.
Bethlem Royal Hospital	1400	300	1	11	7
St. Luke's Hospital	1751	200	0	19	3
York Lunatic Hospital	1777	160	1	1	1
Friends' Retreat, York	1796	150	1	12	6
Wonford House, Exeter	1801	100	1	11	0
Lincoln Lunatic Hospital ...	1820	60	1	8	2
Bethel Hospital, Norwich ...	1825	70	0	15	2
Warneford Asylum, Oxford ...	1826	70	1	2	7
St. Andrew's Hosp., Northamp.	1836	300	1	10	1
Cheadle Asylum, Manchester...	1849	180	2	2	0
The Coppice, Nottingham ...	1859	70	1	10	4
Coton Hill, Stafford	1854	150	1	12	10
Barnwood House, Gloucester...	1860	110	1	14	3
Earlswood Idiot Asylum	1847	570	0	18	2
Albert Idiot Asylum, Lancaster	1864	350	0	14	0

* The fabric charges are not included in these figures. Another 5*s.* a week must be added to complete this estimated weekly cost of maintenance.

These asylums have nearly 3000 beds, and the average weekly cost of maintenance is £1 10*s.*, or, including the fabric account, £1 15*s.*

There are 7828 private lunatics registered in England, who are thus distributed:—

In registered hospitals	2702 or 36 per cent.	} In public asylums 49 p. c.	
In county asylums	484 or 6 ,,		
In State asylums	558 or 7 ,,		
In private asylums	3408 or 43 ,,		
In private dwellings	676 or 8 ,,		

The existing lunatic hospitals, or middle-class public asylums, thus already receive 36 per cent. of all the private patients. The advocates of this method of treatment of the insane, as opposed to the private asylum system, may now fairly say that by thus providing for the care and treatment of 36 per cent. of the private lunatics they have demonstrated the practicability of this method as applicable to the other 43 per cent. now in private asylums.

They can also appeal to the official statistics to show their superiority as regards results over the private asylums. In the last decennium 1870–80 the average recoveries per cent. on the admissions in the registered hospitals was 46·84; in the metropolitan private asylums it was 30·5; and in the provincial private asylums 34·7. The mean annual mortality during the same period was in the registered hospitals 8·12; in the metropolitan private asylums it rose to 11·01, and in the provincial private asylums it was 8·81. They may, moreover, point to Scotland and say that while in England 49 per cent. of the private patients only are provided for in public asylums, 84 per cent. are so cared for in Scotland. What has been accomplished in Scotland may surely be done in England. And certainly, as their strong and final argument, they may challenge a comparison of these asylums, conducted at half the cost, with the best of the private asylums, in England. We have made arrangements for your visiting Bethlem[8] and St. Luke's in London, and also the middle-class asylum St. Andrew's Hospital, Northampton. I should very much like you to see St. Andrew's Hospital, which now contains 300 private patients of the upper and middle classes, from whose payments it derives a revenue of £40,000 a year, of which £10,000 was saved last year for further extensions. It would be difficult to overpraise the power of organisation which has enabled Mr. Bayley, the medical superintendent, to achieve this great result in the last ten years only. I can from frequent visitation speak of the order and comfort which reign throughout this asylum.

Mr. Dillwyn's Select Committee, in their Report (March 28th, 1878), suggested "that legislative facilities should be afforded by enlargement of the powers of the magistrates or otherwise for the extension of the public asylum system for private patients, and in his Lunacy Law Amendment Bill, 1881, read a second time in May, Section 1 enables the justices to provide asylums for the separate use of private lunatics in like manner as the county pauper asylums were built. There can be no doubt, after the experience I have just related of St. Andrew's Hospital, Northampton, that, especially in the populous Home Counties, where no public provision for private lunatics exists, several such asylums with 300 beds might be built on the credit of the rates, and would in thirty years repay the capital and interest sunk out of the profits, and without, therefore, costing the ratepayers one penny. This clause alone would have made of Mr. Dillwyn's Bill a great gift to the insane of the upper and middle class.[9] I cannot but regret that so valuable a measure had to be withdrawn from want of time. It is already a well-worn complaint that home legislation is in England sadly impeded by the weary Irish agitation and debates.

Another method of providing public asylum accommodation for private patients was laid by me before Mr. Dillwyn's Select Committee, in a "Memorandum on the Establishment of three State Asylums for Chancery Lunatics," signed by Dr. Bucknill, Dr. Crichton Browne, and myself. The insane wards of the Court of Chancery pay upwards of £100,000 a year for care and treatment in private asylums. Certainly no loss could be incurred by the Treasury in advancing funds to build these asylums, where the yearly profits would, as at St. Andrew's Hospital, ensure the regular repayment of capital and interest. As the Court of Chancery controls in every detail the expenditure of the income of its insane wards, it is not an unreasonable demand to require that Court to provide fit public asylum accommodation, and such as the visitors deem necessary for the Chancery patients now placed in private asylums, in the selection of which their official visitors have no voice, and over the conduct and management of which they exercise no control.

II. Private Asylums.

There are 3400, or 43 per cent., of the private patients in England confined in private asylums, of whom 1850 or 54 per cent. are in the thirty-five metropolitan licensed houses which are under the sole control and direction of the Commissioners in Lunacy, who diligently visit them six times a year. The remaining 1550, or 46 per cent., are in the sixty-one provincial licensed houses which are under the jurisdiction of the justices in quarter sessions, but are inspected twice a year by the Lunacy Commissioners. I cannot—even did I so desire—avoid in an address like the present stating to you my opinion of this method of treatment of the insane. The tenor of my remarks when referring to the extension of the lunatic hospitals (middle class asylums) has already shown the direction towards which my opinions and feelings tend. John Stuart Mill, the strenuous advocate of freedom of contract, nevertheless, in his "Political Economy," in treating of this subject, observes that "insane persons should everywhere be regarded as proper objects of the care of the State," and, in quoting this authority, I must add, from long personal observation, my opinion that it would be for the interests of the insane of the upper and middle class to be treated as are the paupers in public asylums, where no questions of self-interest can arise, and where the physician's remuneration is a fixed salary, and not the difference between the payments made by his patients for board and lodging and the sums he may expend on their maintenance. "Is there not," writes Dr. Maudsley, "sufficient reason to believe that proper medical supervision and proper medical treatment might be equally well if not better secured by dissociating the medical element entirely from all questions of profit and loss, and allowing it the unfettered exercise of its healing function? Eminent and accomplished physicians would then engage in this branch of practice who now avoid it because it involves so many disagreeable necessities."

Probably all not directly interested in this system, and

[8] In the Journal of Mental Science for July, 1876, there is a very interesting sketch of the history of Bethlem Hospital since 1400, by Dr. Hack Tuke.

[9] I brought this whole subject before the Brighton Medical Society in 1862, in a paper on "The want of a Middle-class Asylum in Sussex," subsequently inserted in the Journal of Mental Science for January 1863.

many who, to their own regret, are so, will concur that if the work had to be begun anew the idea of licensed private asylums for the treatment of the insane of the upper and middle class would be by every authority in the State as definitely condemned as was in 1845 the practice of farming out the insane poor to lay speculators in lunacy. It is, however, a different matter dealing with an established system, and I am not of those who call for the suppression of all private asylums. The friends of many patients in England distinctly prefer them to public asylums, and some patients who have had experience of both contrast the personal consideration and study of their little wants which they receive in private asylums with the discipline and drill of the public institutions. I see no reason why private asylums should not continue to exist side by side with the public middle-class asylums. Time and competition will show which system shall ultimately gain the approval of the public. I am glad to find this opinion supported by Dr. Arthur Mitchell, Commissioner in Lunacy for Scotland, in his evidence before the Parliamentary Committee of 1877. "I think," he said, "there should be no legislation tending to the suppression of private asylums. I would let the principles of free trade settle the matter. If the public have confidence in private asylums and encourage them I would let private asylums exist. I would give them no privileges and would simply take care that the inspection and control over them are sufficient."

The verdict of public opinion in Scotland has been definitely against the private asylum system. While in England 31·5 per cent. of the private patients are confined in private asylums, the proportion in Scotland falls to 9·5.

If private asylums are to continue there should be entire freedom of trade in the business. The Lunacy Commissioners have for many years placed endless impediments in the way of licensing new and small asylums in the metropolitan district. I entirely differ from this policy, and I think that small asylums for four or six patients licensed to medical men would tend to lessen the existing evils of the larger private asylums. The monopoly which the Commissioners have established in the metropolitan district has certainly not raised the asylums there to a higher standard than those of the provinces, where free trade in lunacy prevails. I am tempted to say that it has had the contrary effect.

III. THE INSANE IN PRIVATE DWELLINGS.

Further reform in the treatment of the insane is not merely a question of whether and how they shall be detained in public or private asylums, but rather whether and when they should be placed in asylums at all, and when and how they shall be liberated from their imprisonment and restored to the freedom of private life. This is the reform in lunacy treatment which is beginning at last to take hold on the public mind in England, and has received a new impulse by the recent publication of an essay by Dr. Bucknill "On the Care of the Insane and their Legal Control."[10]

It is more than twenty years ago since the question of the needless sequestration of the insane was first raised in England by my friend Baron Jaromir Mundy, of Moravia. He spoke then to dull and heedless ears. I remember well I thought him an amiable enthusiast, and I said there was no fit or proper treatment for the insane to be found out of the walls of an asylum. I have since learnt a wiser experience. Well might he say on leaving us, "Arbores serit diligens agricola quarum fructus nunquam aspiciet." I am very glad to have this great opportunity of doing honour to the zeal and far-seeing wisdom of the first preacher of this new crusade; would he were here with us to-day to accept my formal adherence to his cause.

There is, I believe, for a large number of the incurable insane a better lot in store than to drag on their weary days in asylum confinement.

> "The staring eye glazed o'er with sapless days,
> The slow mechanic pacings to and fro,
> The set gray life and apathetic end."

In my evidence before Mr. Dillwyn's Select Committee in 1877 I was examined at some length on this question, and I stated that but for my experience as Lord Chancellor's Visitor, and if I had not personally watched their cases, I could never have believed that patients who were such confirmed lunatics could be treated in private families in the way that Chancery lunatics are. I also said that one-third of the Chancery patients were already so treated out of asylums, and I added that I was of opinion that one-third of the present inmates of the private asylums might be placed in family treatment with safety. In support of this opinion I put in this Table:—

TABLE IV.—*Showing the Proportion per cent. in Asylums and in Private Dwellings of the Chancery Lunatics and of the Private Patients (Lunatics not Paupers) under the Commissioners in Lunacy in England and Wales and in Scotland.*

	Proportion per Cent.	
	In Lunatic Asylums.	Under Home Treatment in Private Dwellings.
Chancery Lunatics . . .	65·4	34·6
English Private Lunatics .	94·1	5·9
Scotch Private Lunatics . .	93·8	6·1

This Table deserves your attention. If 34·6 per cent. of the Chancery lunatics are successfully treated in private dwellings, while only 65·4 per cent. are in asylums, it is evident that of the private patients under the Lunacy Commissioners, of whom 94 per cent. are in asylums, some 30 per cent. are there needlessly, and hence wrongly confined. I see instances of such cases every visit I pay to the private asylums.

Another convert to his cause, made by Baron Mundy, is one of the distinguished Vice-presidents of this section, Dr. Henry Maudsley, who, in 1867, in the first edition of his work on the "Physiology and Pathology of the Mind," strenuously condemns the indiscriminate sequestration of the insane in asylums, observing:—"The principle which guides the present practice is, that an insane person, by the simple warrant of his insanity, should be shut up in an asylum, the exceptions being made of particular cases. This I hold to be an erroneous principle. The true principle to guide our practice should be this: that no one, sane or insane, should ever be entirely deprived of his liberty, unless for his own protection, or for the protection of society."

Dr. Maudsley (to strenghten his argument) pointed to the condition of the numerous Chancery patients in England who are living in private houses. "I have," he writes, "the best authority for saying that their condition is eminently satisfactory, and such as it is impossible it could be in the best asylum," and he concluded an elaborate defence of this method of cure with this remark:—"I cannot but think that future progress in the improvement of the treatment of the insane lies in the direction of lessening the sequestration, and increasing the liberty of them. Many chronic insane, incurable and harmless, will be allowed to spend the remaining days of their sorrowful pilgrimage in private families, having the comforts of family life, and the priceless blessing of the utmost freedom that is compatible with their proper care."

In his recent essay on "the Care of the Insane," Dr. Bucknill has a chapter entitled "Household Harmony"—

> "After many moody thoughts,
> At last by notes of household harmony
> They quite forgot their loss of liberty."

I give you therefrom his final and weighty conclusions in his own words:—"It is not merely the happy change which takes place in confirmed lunatics when they are judiciously removed from the dreary detention of the asylum into domestic life; it is the efficiency of the domestic treatment of lunacy during the whole course of the disease which constitutes its greatest value, and of this the author's fullest and latest experience has convinced him that the curative influences of asylums have been vastly overrated, and that those of isolated treatment in domestic care have been greatly undervalued."

What I have hitherto said under this section applies to the home treatment of private patients. The treatment of pauper lunatics in private dwellings is another part of this question, and in which important financial results are involved. The system takes its origin from Gheel, and has been adopted in Scotland with great success. No less than 14·7 per cent. of the insane poor in Scotland are placed in private dwell

[10] Macmillan and Co. (London, 1880), second edition.

ings under the official inspection of the Lunacy Board. Dr. Arthur Mitchell's evidence before Mr. Dillwyn's Select Committee and the several annual reports of the Scotch Commissioners give details of this method of treatment, which my limits only allow me now to refer you to. Financially the cost of this treatment does not reach 1s. a day; in the county asylums (including the cost of the fabric) it is not less than 2s.—a difference of 100 per cent. in expenditure.

With regard to England 6000 pauper lunatics, or 8·5 per cent. of their number, are registered as living with relatives, or boarded in private dwellings, under the authority of the boards of guardians, whose medical officers visit the patients every quarter and make returns to the Visitors of the county asylums, to the Lunacy Commissioners, to the Local Government Board. None of these authorities, however, take much notice of the returns, and little or nothing is known of the condition, care, or treatment of these 6000 pauper lunatics. Any further amendment of the lunacy law should certainly, in some way, bring them within the cognisance and inspection of the Lunacy Commissioners, as is done in Scotland.

A successful effort further to extend this system in England is related by Dr. S. W. D. Williams, the Medical Superintendent of the Sussex County Asylum, Hayward's Heath, in his evidence before Mr. Dillwyn's Select Committee, and also in a paper, "Our Overcrowded Lunatic Asylums," published by him in the *Journal of Mental Science*, for January, 1872. My limits compel me to be satisfied with this brief reference to the important questions included in this third section of my address, "The Insane in Private Dwellings."

IV. THE ENGLISH LUNACY LAW.

Lastly, I would say a few words on the Lunacy Law of England, which, setting aside the special statutes, dating from King Edward II., regulating the proceedings in Chancery, are the result of the legislation of 1845, and consist chiefly of Acts amending other Acts. They form a large volume, which has been carefully edited by Mr. Fry.[11] A Bill for the general consolidation and amendment of these several statutes is an urgent need. The Government of Lord Beaconsfield announced in Her Majesty's speech from the throne on the opening of Parliament in February, 1880, that such a measure was in preparation; and although the political necessities of the Irish question have this year unfortunately absorbed all the energies and time of the Government, we have assurance in the extreme solicitude which the Lord Chancellor on all occasions so markedly shows for the welfare of the insane that the Government will be prepared to give the question of Lunacy Law reform their early and careful attention. I am disposed to think that previous to such legislation a Royal Commission should be issued to investigate and report on the working in detail of the Lunacy Law, and to make suggestions for its consolidation and amendment.

It is exactly twenty-one years since a Parliamentary Committee reported to the House "On the Operation of the Acts of Parliament and Regulations for the Care and Treatment of Lunatics and their Property." Many changes have passed over this department of medicine since the date of that report, and the temporary amendments of the Lunacy Law of 1845, which resulted therefrom, have almost served their purpose. The chief of these enactments of the Lunacy Acts Amendment Act, 1862, passed the following year, and embodied the various suggestions of the Lunacy Commissioners, based on their experience of the working of the Act of 1845, and from an official point of view was a valuable contribution to the Lunacy Law, but it failed to give effect to many of the recommendations of the Select Committee of 1860. In the same year passed the Lunacy Regulation Act, 1862, which led to considerable amendment of the proceedings in Chancery. The important requisite, however, of a cheap and speedy method of placing the property of lunatics under the guardianship of the Lord Chancellor has yet to be attained. One of the most experienced officials in Chancery, Master Barlow, in his evidence before Mr. Dillwyn's Committee, in 1877, said:—"I am a great advocate for a great reform in Lunacy (Chancery) proceedings; I would facilitate the business of the procedure in the office, and shorten it in such a way as to reduce the costs."

After the evidence given by Dr. Arthur Mitchell before Mr. Dillwyn's Select Committee of 1877 it is evident that in the consolidation and amendment of the English lunacy laws the Scottish lunacy law and practice must be carefully considered. It is in Scotland alone that the whole lunacy of the kingdom is under the control and cognisance of the Lunacy Board.[12]

Again, the relation of the Lunacy Commissioners to the county asylums under the County Financial Boards (whose advent is nigh at hand) is a difficult question, the final solution of which will influence for good or evil the future of these asylums. Herein also falls the question I have before referred to of the annual Parliamentary grant for pauper lunatics maintained in asylums, and reaching now to half a million a year. Is the central government to check, through the distribution of this grant, the county boards; or are they to retain the same authority over the county asylums as is now exercised by the justices in quarter sessions? The whole future efficiency of the English county asylums depends upon the right adjustment of the relative control given to the local authorities through the new county boards, and to the central government through the Commissioners in Lunacy.

There is also for consideration, as in contrast with the lunacy laws of Scotland, the divided jurisdiction of the Local Government Board and the Commissioners in Lunacy over pauper lunatics in workhouses, of whom 17,000, or 26 per cent. of their number are there and in the metropolitan district asylums under the control of the Local Government Board with the merest shadow of inspection by the Lunacy Commissioners. Again, to what extent is the credit of the ratepapers to be used in the establishment of public asylums for private patients? I have already said how much I desire to see the public asylum system as now existing in the registered lunatic hospitals extended, more particularly in the Home Counties, by this method. Then the wide question of official asylum inspection. Is the present amount of it enough, and the method of it sufficient for the needs and protection of the insane, or does the Lunacy Commission require both extension and remodelling?

These are but a few examples of the difficulties besetting the question before us of the consolidation and amendment of the English Lunacy Law, and which lead me to the opinion that the whole subject, now ripe for solution, requires skilful and scientific sifting by a Royal Commission, previous to any consolidating and amending Act being laid before Parliament. I am glad to have this occasion to express my personal confidence in the ability, industry, and integrity with which the existing lunacy law is administered by the Commissioners. If I were disposed to criticise their policy, I should say that they trust too much to their one remedial agent, the extension of the county asylums, for meeting all the requirements and exigencies of the insane poor, while as regards the private asylums with 56 per cent. of the private asylum population under their sole control in the metropolitan district, they have from the first, since 1845, been content to enforce the remedying of immediate shortcomings rather than endeavoured to place before the proprietors any standard of excellence to which they must attain.

In concluding my remarks on the last section of my subject—the Lunacy Law of England,—I would say that no mere amending Act like that of 1862, embodying simply the further suggestions of the Lunacy Commissioners, will satisfy the requirements of the medical profession or of the public. In the evidence taken before Mr. Dillwyn's Select Committee in 1877 will be found many suggestions for the further amendment of the lunacy law of an important character, one or two of which Mr. Dillwyn embodied in his Lunacy Law Amendment Bill of this year, which, as I have already said, has been withdrawn. It is impossible for any private member of Parliament, actuated though he be by an earnest desire to remedy grave evils, to deal with so wide and complicated a question as the consolidation and amendment of the English lunacy law. No one is more fully aware of this impossibility than is Mr. Dillwyn, and no member of the House is prepared more heartily to support the Government in passing a wide and comprehensive measure of Lunacy Law Reform.

[11] The Lunacy Acts: containing the Statutes relating to Private Lunatics, Pauper Lunatics, Criminal Lunatics, Commissions of Lunacy, Public and Private Asylums, and the Commissioners in Lunacy; with an Introductory Commentary, &c. By Danby P. Fry, of Lincoln's-inn, Barrister-at-Law. Second Edition. London, 1877.

[12] I may be pardoned if I venture here to refer to the annual reports of the Commissioners in Lunacy for Scotland as containing an amount of well-digested statistical information regarding the lunacy of the kingdom which we search for in vain elsewhere.

SECTION X.—DISEASES OF THE EAR.

ADDRESS

BY

W. B. DALBY, M.D., F.R.C.S.,
PRESIDENT OF THE SECTION.

GENTLEMEN,—The gratification which is felt by all branches of our profession in this country in having the pleasure of meeting our foreign *confrères* has been expressed so completely in the eloquent address delivered by the President of this Congress, that I should be going beyond my duties if I did more than offer the very sincere thanks of the aural surgeons in London to those who have done us the honour of attending this section.

Perhaps in no department of medicine or surgery is it more desirable that those who are practising it should have the opportunity of meeting and comparing their views than in that of otology, and this for the reason that from two very distant parts of the globe—viz., Germany and America—most of the recent researches in the scientific part, and many of the advances in the practical portion of this speciality, may be said to have arisen.

It is most fitting, therefore, that London, being in a measure mid-way between these two countries, should be the privileged ground of a debate, which, I trust, will be an advantage, and cannot fail to be a pleasure to the representatives of aural surgery in Europe and America who are here to-day.

In comparison with some other sections, the subjects selected for discussion at first sight, perhaps, appear to be very few, but this arrangement has not been decided upon without due consideration, and with a very distinct purpose.

The pathology of certain diseases of the ear may be said to be established, and their successful treatment is without doubt conducted by all of us upon very much the same routine. There are others upon the pathology of which very different views are held, and in regard to whose treatment the most various methods are now advocated and practised. When I say that amongst the latter class especial prominence should be given to the so termed proliferous catarrh of the tympanum, its treatment generally, and the several operations which have been devised and practised for its relief, I feel sure that this statement will receive general assent.

I regard, therefore, the present occasion as affording a most unusually favourable opportunity for a thorough discussion upon all points connected with this matter, and the first subject upon the programme—viz., "The Value of Operations in which the Tympanic Membrane is incised," includes all the debateable ground in connexion with it.

Patients with this affection (certainly one of the most common diseases of the ear) are every day coming under the observation of aural surgeons, and it must be acknowledged that from the capitals of Europe and from the United States the views and practice of most eminent authorities, whether as regards general treatment or operative proceedings, are of the most different character, and often opposed to one another even in principle. This extreme divergence of opinion is of itself enough to indicate the difficulties which surround the subject.

I may perhaps be allowed to say that the position which operations upon the tympanic membrane occupies in surgery at the present time is of a somewhat uncertain and indefinite nature.

It is well known that many surgeons never make an incision into the membrane; that others in their practice strictly limit this procedure to those cases of acute inflammation of the tympanum in which there is tolerably conclusive evidence of the existence of pus. A third division, and this includes a very large proportion of those who attend to ear affections, make use of an incision, not only for the evacuation of pus, but also of mucus in a more or less fluid state from the tympanic cavity. In the fourth division must be placed those who to the indications already named, add, as requiring one of the several forms of operation on the membrane, cases in which the tympanum has been the seat either of proliferous catarrh or of inflammation which has left the membrane connected to the ossicles, or the wall of the tympanum by adhesions. Lastly, we come to the division of the tensor tympani muscle. Without expressing any opinion on this subject, it may be said that for whatever class of cases it may be practised, it can hardly be declared to take rank amongst those operations in surgery as one which, in consequence of its results, has received the recognition that is (and must be) accorded to every surgical proceeding worthy of universal adoption. It cannot, for example, in the present state of its history, bear comparison with a somewhat analogous operation in the department of ophthalmology—viz., iridectomy; and whatever position it may eventually occupy, it would be hardly too venturesome to predict for it a similarly brilliant future, if the anticipations which were formed by those who introduced and practised it had been even in a measure realised. What is the precise place which it holds at present, in the opinion of those well qualified to judge of its merits, we shall hope to hear before this section has concluded its discussions. We may, I think, fairly presume that the object which is sought to be attained from all operations which include incision of the membrane is of a twofold character—viz., the evacuation of the products of inflammation, or the relief of tension, and there are probably no surgeons of experience amongst us who have not some time during their career performed various operations with these principles in view. If a general expression of opinion on the respective merits and demerits of each and every operation on the membrane is extracted at this meeting, such as may serve as a guide to those members of our profession who are devoting their energies to the study of diseases of the ear, the interests of surgery will have been well served, and I sincerely trust that this may be the result of our deliberations.

The next subject for discussion, "Morbid Growths within the Ear," not only includes the origin, nature, and treatment of bony enlargements and exotoses in the external meatus, of polypus from whatever part arising, of myxoma, sarcoma, and cancer; but also the treatment of perforations of the membrane, inasmuch as this is a very constant accompaniment and exciting cause of these growths.

Probably no portion of the body so well as the ear could be selected to illustrate the doctrine in pathology, which teaches us that a local irritation must precede a heterologous or homologous formation. To take the examples of myxomatous, sarcomatous, and cancerous growths. Certainly in none of the cases which I have myself seen, altogether three in number, or which within my knowledge have been recorded by other observers, has malignant growth affected the ear, unless it has been preceded for a considerable period by a purulent discharge secreted from the lining membrane of the tympanic cavity. The same rule held good in the only case in which I met with a round-celled sarcoma in the ear. A similar law will, I think, be always found to obtain when myxomatous tumours are in this position. We all know how very generally every form of polypus is but the sequence of a perforation; and even when a polypus takes its origin from the external canal, a local irritation represented by a circumscribed inflammation, which involves the periosteum of the canal, has existed previously. In the case, too, of multiple bony enlargements of the canal, although very often it is not easy to point to a local irritation, the history of a perforation of many years' standing may not unfrequently be extracted from the patient, so that it is fair to infer that the passage of a purulent discharge over the surface of the canal has been the direct cause of the so-called exostosis. In order to show the extreme probability of the truth of this explanation, we must fall back upon our personal experiences of cases. On five occasions I have attended patients with perforation of the membrane, who have been dismissed, and have presented themselves between two and three years later with multiple enlargements of bone almost completely blocking up the canal. Another point, which also bears out the theory of a local cause to these growths, is one which I have constantly observed (and it has been recorded by others). It is that when the enlargements are found in both canals, the patients have been much addicted to sea-bathing.

The third subject on the list, "The Loss of Hearing where the External and Middle Ears are Healthy," embraces a very large proportion of the conditions under which the hearing is defective, whilst it is at the same time associated with subjective nervous symptoms. In this category will come syphilitic disease (inherited and constitutional) of the nervous structures, that very large class of cases to which, for want of a better name, and apparently for no other reason, the term Menière's disease has been applied; a subdivision of this class, in the contemplation of which no one who has had

a large experience of ear diseases can fail to be struck with the intimate relation which exists between the auditory and pneumogastric nerves. Cases of extreme deafness and perfect hearing alternating, without any explainable reason so far as an examination can detect. Those instances in which a permanent or temporary loss of hearing is without doubt primarily due to emotional influences form a most interesting and distinct group in themselves. This is not an occasion on which I would venture to occupy your time by the relation of cases, but I may be allowed to mention by way of illustration that I have known the hearing in apparently healthy subjects to be almost completely lost on the witnessing a sudden death of a near relative; on several occasions immediately upon the receipt of news of a painful nature; in the case of women upon the fright produced by a cry of fire, or an alarm of burglars in the house; at the witnessing of the terrible sight of a man cutting his throat; once on the receipt of great good fortune which had not been anticipated. On each of these occasions the hearing power of the patient was always perfectly good up to the time of the catastrophe, and immediately afterwards the deafness was intense, so that the change in all probability was almost instantaneous. In passing, I suggest as a possible, though imperfect and incomplete explanation, that in the cases referred to, a sudden hyperæmia in some portion of the brain, or perhaps in the medulla, at the origin of the auditory nerve, may account for a phenomenon which we are not at present in a position to explain. In truth, because we cannot actually define the lesion, or even its position, it is none the less certain that a local origin must exist. We have also to consider the unmanageable subject and too often unmanageable symptom of tinnitus; the sudden and total loss of hearing consequent upon mumps, diphtheria, and some other acute diseases; the loss of certain ranges of notes, whilst other sounds are normally heard. The list might be readily extended, but it is only necessary to mention what I have done to show that there is no dearth of material for our deliberations.

In many nervous diseases which come under the observation of physicians a certain train of symptoms is met with, at the same time the actual lesion, or sometimes even the position of the lesion, is uncertain. The diseases are, however, quite familiar to us all, and we apply the same name to them. Amongst aural surgeons I am sure that mental notes are often taken, by the help of which, if they received expression, the nervous disease of the auditory apparatus would be sorted into groups, nameless, perhaps, but none the less suggestive of the probable termination of the cases, and rich in facts that might serve as a guide to future observers. That such notes, derived from the experience of years, may be laid before us when the third selected subject is under discussion I have great hopes. I purposely forbear to refer to any of the eminent men whose names are connected with the various diseases I have mentioned by suggested treatment, by the operations which they have introduced, by their valuable investigations and observations. They are perfectly familiar to all the members of this section, and it would be difficult as well as invidious to allude to any without mentioning the names of many of the distinguished visitors whom we have the good fortune to meet to-day.

SECTION XI.—DERMATOLOGY.

ADDRESS

BY

ERASMUS WILSON, F.R.S.,

PRESIDENT OF THE SECTION.

MY BRETHREN,—The Council of the Dermatological section of this great Medical Congress offers you a hearty welcome.

We assemble to-day as a part of a great international body, for intercommunion of friendship, of information and of thought; and, just as the Congress, taken as a whole, has for its main purpose to diminish pain and suffering, and to promote the health of the people, so we in our department have met to co-operate with a similar intention.

The important object now stated we hope to arrive at, partly by means of the new ideas which you, our foreign brethren, are about to sow amongst us, and partly by a judicial reinvestigation and exposition of the principles which we at present adopt for the diagnosis and treatment of cutaneous disease.

The bias of the British medical mind is strongly in favour of those studies which lead directly to the cure of disease; and whilst we recognise fully the advantages and necessity of pathological research in every variety, the conclusion which we seek most ardently to attain is the means of restoring our patients most certainly and most readily to a state of health.

As a groundwork of our operations, in this respect, we aim at the regulation of the general functions of the economy—of those all-important forces, the functions of digestion, of assimilation, and of nutrition; for experience daily proves to us that when such regularity is obtained many of the diseases which we are called upon to treat yield to the ordinary processes of nature, and return to a state of health without further delay. And this we regard as the true significance of constitutional treatment, by means of which every known disease of the skin may be ameliorated, and in most instances cured.

But whilst we thus place constitutional medicine on a pedestal as deserving the highest consideration of the practitioner, we by no means disregard the value of topical medicine. We have to contend with local lesions and with local pain; and for the relief of these we seek for remedies which shall be at once the most convenient and the most effectual. In one case a purge will relieve the patient, but the addition of a soothing local application will be requisite for his cure. In another case, a local application alone will accomplish a great deal, but the addition of a constitutional remedy will assist and facilitate the cure.

But before we can answer the question, What is the best constitutional and what the best local remedy? we must have made up our minds as to the *cause* of the disease, and as to the precise *method* by which we shall attempt the removal of that cause. Our treatment must not be haphazard or simply routine, but must be directed according to a fixed intention. Under such circumstances the treatment of the disease itself is of comparatively secondary importance. Let us remove the cause and the disease will be cured spontaneously. Our patient may be a sufferer from eczema; but our patient at the same time is a victim to dyspepsia. In such a case it becomes our duty to effect the treatment of the dyspepsia first, and the chances are that when the dyspepsia is alleviated the eczema will be very nigh cured.

In another case the eczema may be associated with more or less irritability of the nervous system without any leading dyspeptic symptoms; in this instance our remedies should be directed towards the soothing and quieting of the nerve centres and nerves; and both constitutional and local treatment should be invested with a sedative character. If there were any suspicion of impurity of blood in the first instance there can be none in the second; the first may be regarded as in some sort a blood disease, the second as a nerve disease. But in both the local treatment would be essentially the same, the difference between them being a difference not of disease but of cause.

Now, what we should endeavour to establish in these cases is not only a principle of treatment, but also the material of treatment. In the neurotic case arsenic will be found a most useful, and probably an essential, remedy; in the other or assimilative case, arsenic would be utterly worthless.

If all cutaneous diseases depended on the presence of a poison in the blood, as in the instance of syphilis, the elimination of the poison would be the aim of our treatment in every case, and the results would be as satisfactory as we know them to be in syphilitic affections. But in other cutaneous diseases it becomes necessary to settle in our minds whether we have to deal with a disease taking its origin in disturbance of the digestive functions, or whether it be neurotic to a greater or less degree; whilst it must likewise be admitted that in certain cases, particularly those of long duration, both causes are apt to prevail.

For therapeutical purposes all diseases of the skin might be assembled, if we except syphilis and diseases proceeding from local causes, under three heads—namely, diseases depending on disorder of digestion and assimilation; diseases depending on disorder of innervation; and diseases of nutrition. As an example of the first kind we might take eczema, with its multitudinous manifestations. As an example of the second we should have pruritus and prurigo; and, as examples of the third, papilloma and fibrosis. But we can-

not fail to recognise the fact that practically there is a greater or less blending of the whole. The pruritus of eczema belongs to disordered innervation; and aberration of nutrition may be accompanied with symptoms which appertain to both the others.

Thus, in the lepra of Willan, the psoriasis of modern schools, we have a disease which is due to altered nutrition of the skin from defective organisation of that structure. But as the nerve-power or life-power of the skin is insufficient to restrain abnormal function, so capillary congestion constitutes a part of the disease, and the hypertrophous growth of papillæ and excessive production of morbid epidermis must be regarded as a passive nutritive change or passive growth. In ichthyosis, with a starved condition of the skin as far as nutrition is concerned, we have an excessive papillary growth and excessive accumulation in the shape of altered epidermis. But still more interesting illustrations of abnormal nutrition are evinced by excess or defect of pigment; by the substitution of a lowly for a more highly organised tissue, as in fibrosis; and by the exuberant proliferation of cell-tissue of low organisation, which is met with in the instances of tinea, of favus, and of epithelionma.

If I were called upon to summarise the diseases of the skin such as they exist most commonly in this country, I should begin with eczema, as occurring at all ages and in every condition of life; tinea might follow next as a disorder of childhood; then the acne of youth; and next, the so-called acne rosacea of the adult, which latter is actually a form of eczema. The lepra of Willan is not very common, neither is scrofula in its cutaneous forms. Looking to the cause of these diseases, we find malassimilation and nerve-irritability; aberration of nutrition and defective nutrition. And, therapeutically, our most reliable remedies are mild purgatives with tonics in the diseases of dyspeptic origin; nutritive tonics; and especially (arsenic as a nutritive tonic, and in that sense a direct nerve-tonic.

What I have now said is intended to open up to the minds of my hearers a picture of the broad field in which we all mutually labour; to point out that many portions of that field admit of independent exploration; and to show that, starting from the line of our existing knowledge, there yet remains very much to investigate—singly for the perfection of the parts, and collectively for the perfection of the whole. This is the field of dermatological culture and research; and with this brief introduction I now call you to the work of our section.

Once more, brethren, we bid you welcome as friends and fellow-workers.

SECTION XII.—DISEASES OF THE TEETH.

ADDRESS

BY

EDWIN SAUNDERS, F.R.C.S.,

PRESIDENT OF THE SECTION.

GENTLEMEN,—Before assuming the duties and responsibilites of President of the Odontological Section of this great Congress, permit me to thank you for the honour you have conferred upon me in electing me to that high office. And let me assure you that it will be my earnest endeavour to justify your choice, however I may fail to satisfy my own and your well-warranted expectations. And, indeed, were it not that I am sustained by the kind co-operation of two vice-presidents and a secretary in whom our profession feels a just and legitimate pride, I might well feel oppressed by the onus of doing full justice to the position on so august an occasion. Nor was it, I am free to admit, until I had the permission of the Executive Committee to call around me as a council some old and tried associates in professional work that I began to experience the requisite energy and confidence. And having made this personal avowal and confession, I turn to the distinguished company before me who have done us the honour to visit our too great but not too gay capital, and to become for a too short time and for our signal profit our guests at this great intellectual banquet. Permit me, gentlemen, on behalf of the English members of the Congress, on behalf of our largest Society, the Odontological Society of Great Britain, now in the twenty-fifth year of its somewhat chequered but on the whole prosperous existence, and on behalf of the whole body of the dental profession in England, to offer you a hearty welcome, and to assure you of our earnest desire to render your too brief visit both profitable and pleasant. We hail the happy occasion of our friendly intercourse, and we trust that friendships begun under such benign auspices may continue and progress in interest through many prosperous years. Such gatherings as these, with the pleasurable amenities they involve, do much to soften and refine the manners, to quicken the intellect of all concerned, and to remove misconceptions of national or individual character which are apt to be engendered by isolation and want of friendly intercourse. Congresses such as that at which it is our privilege at this time to assist, serve a great social purpose apart from the intellectual and scientific aims at which they are more immediately directed. It is much that they afford an opportunity and a stimulus for intellectual effort, which might otherwise, with man's proverbial procrastination, never be called into action. But in these days of an ever-teeming press, and of facilities for the free intercommunication of ideas, this is subordinate to the advantage of personal knowledge of the individual, and the living interchange of thought. The modern congress, which seems now in high favour, owes its existence—or, shall it not be said, its revival?—to the intellectual activity, joined with a wide eclecticism, which is a characteristic of our times, and which seeks to assimilate to itself whatever is of value in the past, or in other lands, whether in social manners and customs, in matters of dress or of daily life, in schools of architecture, or in the realms of science or art. The generally accepted idea of a congress is, if I mistake not, more than a fortuitous assembly of persons engaged in similar pursuits and drawn together by community of thought and interest.

It is the deliberate coming together of distinguished men or of experts; of set purpose and for a specific object; the persons constituting the Congress being invited and selected with a due regard to their knowledge of the subject, for the consideration of which it has been convoked. This is especially evident in political affairs, and notably in a recent instance in a northern capital where the great countries of Europe represented by their most distinguished statesmen and diplomatists met in solemn conclave for the rectification of national frontier lines, and for the determination of other questions of vital importance, which must otherwise have been left to the rude arbitrament of the sword. And may we not indulge the hope, in the interests of an enlightened humanity, that this high function may be more extensively employed to interfere between the unbridled ambition and lawless rapacity of States more powerful than just, and the resolute resistance to subjugation or spoliation on the part of the oppressed, protracted, it may be, to the bitter end through years of carnage and misery? So might the world be spared the saddening spectacle of "man's inhumanity to man," and the fair page of contemporary history be unsullied by the foul blot of the blood-stained record. Ours, however, is a Congress of peace, and we are happily not called upon to compose animosities or to adjudicate upon conflicting claims. The triumphs which we are met to celebrate are those of man's skill in limiting and repairing the ravages of disease; our victories, those over Nature herself when she is forced to yield up another of her secrets as the reward of patient research or of well-conducted experiment. Our international reunion may be regarded as a periodical taking stock of the gains of science, of improved appliances, of more accurate means of diagnosis, and of more efficient modes of treatment in the various departments of medical practice. And for the better and fuller carrying out of this intention, it has been found advisable, having regard to the present advanced state of medical and surgical science, to divide the work of the Congress into sections.

These sections carrying on their work simultaneously, and the work of each section being complete in itself, greater fulness and accuracy of detail are secured without any sacrifice of the unity of the one grand result, as the work of each section is the necessary complement of the whole.

In that with which we are more immediately concerned, one of the youngest departments of surgical practice, and which for the first time enjoys its own distinct and prominent position, considerable interest will attach to the question of education, and the regulations which in each country govern

the entrance into the profession. The former part of this very important subject will, I trust, shortly be brought under the notice of the Congress by one than whom none is at once more fully informed and more entitled to speak with authority—I mean Mr. John Tomes,—who has in this direction, during the last quarter of a century, done much to advance the interests and to establish a strong claim on the gratitude of the profession. Nor would the English sense of justice and fair play be satisfied without an acknowledgment of the more recent services of his colleague in this good and great work, Mr. James Smith Turner, without whose unsparing devotion of time and energy it could not have been brought to so successful an issue. To the joint action of these two gentlemen, to the lawyer-like precision and forethought of the former, no less than to the vigilance and promptitude of the latter, is the profession indebted for that invaluable piece of legislation, the Dentists Act of 1878. It must not be forgotten, however, that to our foreign friends the nature of the enactment is of greater interest than the means or the persons by whom it was obtained. By the provisions of this Act, then, which came into operation on August 1st, 1879, it is forbidden to anyone to use the word dentist, dental practitioner, or other title implying that he is qualified to practise dental surgery, unless his name appears on the Register of that body; thus giving to the dentist the same protection and privileges as are enjoyed by the physician and surgeon in this and other countries. By this measure the opprobrium was removed which so long rested on the dental profession in this country: that it included a large proportion of ill-qualified practitioners, and in many cases of persons who were unsuccessful in other pursuits, and who were attracted to it by the absence of restrictions or of preliminary examination. By the provisions of this Act, introduced by Sir John Lubbock, not only are the public preserved from the extortion and malpraxis of the ignorant and unprincipled, but a grave discouragement is removed from the educated and honest practitioner. For it is only in human nature that high aims and honest zealous work should languish in the atmosphere of indifference and lack of appreciation. In thus obtaining legal sanction for the organisation of the profession it was desired strictly to maintain its connexion with the Royal College of Surgeons, as it was rightly felt that separation from that body would involve abdication of the status which it had hitherto enjoyed. And when the College had been memorialised on the subject, showing that the curriculum for the diploma for general surgery, which was the only qualification then open to him, did not comprise certain matters of the first importance to the dental practitioner, that in fact the entire subject of dental surgery found no place either in the teaching or at the examining board, an arrangement was accepted for more fully meeting the requirements of the case. Accordingly a conjoint board of examiners, consisting of half surgeons and half specialists, was created for the licentiateship of dental surgery, with a corresponding modification of the prescribed course of study, eliminating much that was of little value and substituting what was regarded as especially necessary in that particular line of practice. Thus by varying, but not lowering, the educational standard, an arrangement has been effected which, if not in all respects perfectly satisfactory, goes far to meet the reasonable views and wishes of those who have the welfare of the profession at heart. With this bare outline of our proceedings in reference to the organisation of the profession before us, we shall listen with interest to what has been accomplished in other countries in the same direction; not, it may be hoped, without mutual profit and advantage. Gentlemen, I feel that I ought not longer to tax your attention, but having declared this section of the Congress open, that we shall prepare ourselves to listen with appreciation and enjoyment to those varied and valuable contributions to the literature of our speciality with which we are so liberally favoured both from home and foreign sources. And first your attention will be asked for the always welcome utterances of one whose contributions to science during a long series of years, many of them having a direct interest for our own speciality, and almost unparalleled for number and value, have made his name a household word in both hemispheres—I mean Professor Owen. We feel grateful for his presence here to-day, which will confer prestige on our proceedings; and we tender him with our thanks our sincere felicitations that he has been able to witness, in unimpaired health and energy, the realisation of his hopes and wishes in the completion of that noble structure the Museum of Natural History.

SECTION XIV.—MILITARY SURGERY AND MEDICINE.

ADDRESS

BY

PROFESSOR T. LONGMORE, C.B., F.R.C.S.,
PRESIDENT OF THE SECTION.

COLLEAGUES of the Naval and Military Services of our own and foreign countries, and all friends who are good enough to assist in the work of this, the Section of Military Medicine and Surgery,—Allow me, in the first place, to say how sensible I am of the honourable and responsible nature of the position in which I have been placed as president of this section, and to express my thanks for the trust you have reposed in me. I accepted the office with very great diffidence in obedience to expressed wishes which I felt I could not do otherwise than comply with. I only entertained the hope that I might be able to discharge its duties satisfactorily with the help of the eminent vice-presidents, council, and other officers of the section, on whose support and assistance I felt assured I might confidently rely.

In the second place I wish in the name of my British colleagues to say a word of welcome to our foreign friends who have not hesitated to come in many instances from places at remote distances, to join in the labours of this section. We feel honoured that men so distinguished in the science and practice of naval and military surgery should have come among us, many of whom bear names that are not only household words in their own respective countries, but are familiar in every part of the world where the progress of military medical science is watched and improvements in its practice are studied. It is a peculiar pleasure to me to welcome those of our foreign *confrères* who have been able to attend the Congress; for among them are many who have been friendly colleagues at previous meetings in various parts of Europe for purposes closely akin to the objects of our present gathering—the advancement of surgical knowledge and the improvement of the means of alleviating the sufferings inseparable from a state of warfare. We hope that our foreign friends may find themselves well repaid for their journey to London on the present occasion; and that, on returning to their respective countries, they may not only feel that the part of the time which has been devoted to the discussions at the sectional meetings, and to observation of the scientific collections which have been specially formed for the occasion, has been passed profitably, but that also the time spent in our social gatherings has afforded an opportunity of renewing old friendships and forming fresh associations which will remain sources of very many pleasant reminiscences in the future.

Although this is the seventh meeting of the International Medical Congress, it is the first, I am informed, at which there has been a special section for the consideration of subjects connected with military medical and surgical practice; and yet there seems to be a wide field of work for such a section in a professional congress of the kind. Although the true principles of medicine and surgery must be true everywhere, in military as in civil practice, yet everyone practically acquainted with the conditions inseparable from service in the field knows that the application of those principles has perforce to be so modified that the modes of application themselves become a distinct branch of study. In saying this I do not confine myself to the mere physical or manual application of these principles—to the performance of a surgical proceeding in this way or that way,—I refer to matters of far more general influence. Consider how the whole range of what is generally spoken of as "conservative surgery" has to be modified in field practice from the mere influence of the circumstances by which our patients are surrounded in campaigning. How many injuries are there that would be appropriately treated in civil hospitals by an expectant method of treatment, by methods calculated to preserve the injured parts and with good grounds for hoping to secure restoration of their function, which on numerous occasions the military surgeon would not dare to undertake from his acquaintance with the dangers to life that such a practice would entail on his patients under the exposures, repeated changes from station to station, and other sources of disturbance to which they would have to be subjected

in field practice! Remember also the special considerations which arise out of the characters and complications of the great bulk of the injuries themselves which have to be dealt with in military practice, those caused by gunshot. How greatly, again, the constitution, the internal economy, the mobility of armies affect everything bearing on surgical practice in them; the quantities and descriptions of surgical and medical materials that the military surgeon can have at his disposal for his patients; the amount of protection, care, and attention he can obtain for them; the means at his command for transporting them from place to place without aggravation of their injuries! How much patient thought, what prolonged examination and trials, what experience have already been brought to bear on these subjects, and how much still remains to be done in order to attain results which may harmonise with military necessities, and, at the same time, conduce to the welfare of the patients who are placed under our charge! I may allude, further, to the many subjects for deliberation which the crowding together of bodies of troops and animals in the close quarters in which they often have to be placed gives rise to; the means of warding off the diseases which such conditions are apt to engender, the means of combating and extinguishing them when they have sprung into existence. In naval professional practice, too, in ships of war, the need of special attention being given to many subjects of medical and surgical interest seems to be obvious. Although the officers and men have the advantage of being in their ordinary house and home on board ship, with its usual furniture, and many things may be carried with them that are not available to soldiers in the field; still, in modern ships of war, with their artificial light below the water-mark, artificial supply of air, large amount of complicated machinery, and limited space for movement, what a necessity there must be for special consideration regarding the means of preserving health, and of the arrangements to be made, and the means to be adopted for dealing successfully with injuries which may happen on board, especially when they occur in large numbers, as in case of an action with the enemy! I need not dwell further on the importance of a section in such an international congress as the present being specially devoted to subjects bearing on the pursuit of medicine and surgery in fleets and armies. A large proportion of those who are present probably have some personal experience of military practice, and, if so, already know how much advantage may be anticipated from meetings at annual intervals for the purpose of discussing special professional topics which are still involved in doubt or obscurity; for making mutually known and sifting the experience gained under varied military circumstances and conditions; for trying to arrive at definite rules of practice; and, in short, for acquiring any knowledge which may particularly conduce to the benefit of the officers and men who depend, often without power of appeal, on our judgment and skill for restoration to health in sickness, and for safety and repair when subjected to wounds and injuries. Although belonging to all nations, we have the advantage of being able to meet together without national jealousy, and with no other rivalry than that of vieing with each other in endeavours to discover what may most benefit the sick and wounded. It is not with our province of thought and action, as it is in some measure with those other parts of military science and practice on which national safety or superiority in power may depend. A certain amount of reticence in regard to them is justified by national self-interest. We can speak quite openly of all our professional plans and arrangements. If they contain any features better than those belonging to our neighbours of other countries we have no fear of imparting them. We hope, indeed if they are really better, that they may be adopted and turned to account; for, if practically applied, our own people may possibly be among those who will be benefited by their adoption. And if we lack anything in our military hospital system which our neighbours have better than ourselves, we have no reason to suppose they will object to imparting information on the subject to us; they, in turn, may be benefited by our improvements. Neither surgeons nor patients on either side can be harmed by mutual confidence in matters appertaining to technical knowledge or departmental arrangements. Even in time of war there are no enemies within our sphere of action.

The subjects on which observations are to be read at the present meeting of this section, and on which discussions are expected, are all subjects having an important bearing on naval and military surgery. I need not enumerate them, as they are already before you in the printed programmes. I will only observe that the most urgent of the questions named for debate at this meeting appears to be the manner in which the antiseptic treatment of wounds can be best carried out in time of war. This question, more or less, covers and influences many of the other subjects put down for consideration, such as the advance of conservative surgery in field practice, the treatment of injuries of bloodvessels in the field, improvements in field-hospital equipment, and several others. As you well know, the experience that has hitherto been gained in the strict application of antiseptic principles to the treatment of wounds in the field has been obtained only under exceptional circumstances, and is, comparatively speaking, still exceedingly limited; but, such as it has been, the published results have been so largely superior, both as regards saving life and also as regards the restoration of the usefulness of wounded parts, to the published results of any other methods of treatment in the field, that, so long as this difference holds its ground, we are morally bound to try to extend the practice. All military surgeons, however, can readily perceive the practical difficulties that lie in the way of applying the antiseptic precautions and details of treatment inculcated by Lister, owing to the peculiar conditions incidental to military arrangements in time of war. It appears to me that one of the chief points to be settled, looking at the question from the point of view of military practice, is whether the action on the air by the antiseptic spray is an essential part of the treatment; whether some of the other forms of antiseptic treatment advocated by eminent surgeons are, or are not, capable of producing equally favourable results? If the action on the air by atomised antiseptics be an essential part of the proceeding, then the hope of applying it under the ordinary circumstances of warfare seems almost desperate—so free, not to mention other obstacles, is the access of air, and frequently so strong is its movement, in the field, at the dressing station, and in all tent hospitals. On the other hand, if this part of the process can be dispensed with, then the question will be greatly simplified, and attention will only have to be directed to the description of antiseptic applications and dressings which will best answer the intended purpose, and to the manner in which these dressings can be rendered available, consistently with other military requirements, when and where they may be needed, and in adequate quantities for meeting the wants of each particular occasion. Experience is not wanting of antiseptic treatment being carried out by eminent surgeons in some civil hospitals without the use of the spray at the operation table, and in other instances without its use during any part of the course of treatment; and, it has been alleged, with no less beneficial results than when the spray has been employed. It remains to be proved how far these observations are thoroughly correct, and satisfactory proof on the point can be only arrived at when sufficient experience has been collected on the subject.

I have been asked to give at this meeting an explanation of the system by which help is arranged to be afforded to the wounded among troops on active service according to the existing regulations of the British service. It has been suggested that to those who have not had occasion to study the subject this description would not only possess some features of novelty and interest in itself, but would also furnish indications of the extent to which particular modes of treatment of wounds and injuries might be capable of application under the arrangements described. In accordance with this suggestion I have brought the two diagrams which you see before you as a ready means of furnishing the explanation required.

The surgeons who are now entering the British military medical service can scarcely realise the greatness of the changes which have occurred in their branch of the profession during the last twenty-five years. When I commenced my military service the British army was scattered in comparatively small detachments over the kingdom and in every colony. It was for the most part engaged as a safeguard for peace and good order in our own possessions, and occupied in performing duties that are now discharged by police, rather than in preparing itself for the sterner necessities of a time of war. Still more marked was this aspect of matters with respect to the army medical service. It was entirely a peace establishment; and its duties were conducted as if there were no liability to the state of peace being interrupted. Nothing was prepared for a condition of

war, whether as regards plans of administration for field service, organisation of field hospital establishments, means of transporting sick and wounded during a campaign, or the descriptions of field hospital equipment to be employed. The results of the practical experience in these matters which had been gained during the Peninsular campaigns had gradually disappeared. In conducting the duties of the medical service, the attention had come to be largely devoted to economical details in small matters, which, in the aggregate, produced but comparatively trifling results; while the general system on which the hospitalisation of the sick was conducted was cumbrous, wasteful, and needlessly costly. This condition of things received a rude shock when the Crimean war occurred, and when, as the Director-General of the Army Medical Department at the time testified, without any records or patterns to guide him, everything for active service in the field, as regards the field-hospital establishments, kinds of supplies, and forms of ambulance vehicles, had to be improvised for the occasion. The breakdown from want of systematic preparation which then occurred (not a break-down so far as the surgical staff were individually concerned, but a break-down in respect to the establishments with which they were connected) led to prolonged investigations, which not only demonstrated the need for a thorough reform of departmental arrangements and regulations, but also showed the directions in which the changes were required to be made. The experience of successive wars on the continent of Europe and in the United States since that period has step by step led to further developments in military medical organisation for field service, no less than it has done in the purely combatant parts of the army.

The principal problem which the medical department has had to solve has been to devise a scheme by which help and protection should be afforded speedily and effectively to the wounded over the large area which modern battles in Europe now usually occupy, and to provide for their subsequent treatment so long as circumstances may render their stay on the theatre of war a matter of necessity; one, at the same time, which should be capable of being modified and adapted to all the varying conditions of warfare—that is, variations as to features of country, difference of climate, seasons, numbers of troops engaged, opportunities of shelter, and other such matters; that should not only not impede, but, on the contrary, should work in harmony with all the other military arrangements; that should be economical in regard to the number of officers and men employed; that should include an equipment which, while adequate to the needs of the hospital service, should not exceed the means of transporting it; and lastly and particularly, a scheme that, as regards the *personnel* necessary for the field-hospital and ambulance duties, should be little more than a redistribution of the *personnel* ordinarily employed in the stationary hospitals at home; so that, acting as a peace establishment as long as peace might last, the *personnel* should, at very short notice, be capable of being organised and arranged into the different parts composing the war establishment.

The plan adopted for accomplishing these various objects may, for description, be conveniently divided into two parts, viz.: (1) that for the medical service from the base of operations to the limit of the area of active operations of the army in the field, and (2) that for the medical service with the army itself. The hospital establishments belonging to these two divisions of the medical service are shown separately in the two diagrams. They are mutually in a great measure independent of each other, although connected and working in concert; and they differ in their qualities, administration, and in many articles of their equipment, although the officers and men of the army medical department serving in them are interchangeable. The establishments at the base of military operations and along the lines of communication with the army have more or less of a stationary character, while the others are organised for being as movable as the troops which they accompany.

In making a survey of these establishments it must necessarily be a rapid and rather superficial one. It will be convenient, perhaps, to start from the base and to follow them to the front, so far as the establishments along the lines of communication with an army in the field are concerned.

The insular position of our country leads to complications in the medical preparations for war from which continental nations are for the most part free. The officers and men of the medical service must at first be conveyed in detached bodies on board ship, as well as the hospital stores and equipment. The vehicles which are to convey the stores, as well as the carriages for the wounded, must be made capable of being folded up into convenient packages for being carried by sea to the place where the army is to be formed before commencing its operations. Continental armies can generally move in their accustomed ways, and concentrate their forces in a convenient place on their own frontiers. Wherever a British army may be despatched for hostile purposes, whether it be on part of a coast belonging to a friendly ally, or whether it be a position secured by force from a hostile power, the establishment of a new hospital in the place is one of the first necessities experienced. It is required at once to receive the sick and hurt who have accumulated in the transports during the voyage from England, and will be wanted to receive the casualties that are sure to happen while the force is being collected and formed prior to starting for the special purpose of the expedition. It is required for the reception of all the medical and surgical stores that have been brought from England for use during the campaign. If the position is retained as the base of operations, the hospital thus established will continually grow in importance as long as the campaign lasts. When once the military operations are in progress, a large proportion of the patients that result from them will find their way ultimately to this hospital, and here they will be disposed of, whether they are sent back to activity in the field or are invalided to England. Again, as the military operations approach their termination, and other hospitals that have been formed successively in advance are broken up, their occupants will fall back upon this base hospital, so that it will be the last medical establishment to be closed as well as the first to be opened in a campaign. The base hospital is consequently required to have a more permanent character than other hospitals in the field. Some available buildings are usually secured for its occupation, and these may be supplemented by subsidiary buildings or encampments, according to circumstances. The administrative as well as the executive staff are large in number, especially the executive staff, not only on account of the extent and variety of the duties to be performed, but also because it is the principal position where reserves of medical officers can be conveniently retained for replacing casualties in the field, and for supplying the demands which the military movements occasion.

As soon as the army quits the place of rendezvous and commences its march, casualties will occur of various kinds, and often in larger numbers than might be anticipated by those who have not studied the experience of such occasions. While comparatively near to the base, those that become disabled can be sent back to the general hospital established there, but after the troops have advanced to some distance, this would be inconvenient, and fresh hospital establishments have to be opened at suitable positions along the roads which the troops are following. These then become the stationary field hospitals along the lines of communication, or, as they were formerly called, the reserve or intermediate field hospitals. They are placed in situations which are not only suitable as regards sanitary considerations and hospital needs, but also as regards safety; in positions which the military authorities believe to be safe from incursions of an enemy, and from which the communication with the front in one direction and with the base in the other direction, may be expected to remain secure. They may be established in buildings in villages or towns, or in camps near them, or near railway stations. The equipment allotted to each of these hospitals is very similar to that of a field hospital, only differing in having an increased quantity of hospital clothing, and in not being supplied with special transport vehicles.

In front of the stationary field hospitals, between them and the movable field establishments, is the "advanced depôt." At this station a supply of medical and surgical supplies and appliances is stored, ready for issue to meet wants in the bearer companies and movable field hospitals. This is the station, too, to which the sick and wounded are brought from the field by the bearer company's ambulance waggons, and from which they are forwarded by vehicles obtained from the commissariat department to the stationary hospitals along the lines of communication with the base.

These comprehend the establishments between the area of active military operations in the field and the base. The duties to be performed, so that the patients in the stationary field hospitals may have their wants properly attended to, so that there may be no interruption of the movements of

men and materials between the field and the base to and fro, are so onerous and important that they are placed in the separate charge of a particular surgeon-general named for the purpose, as the military duties are in that of a general officer distinct from the general commanding the troops in the field. A surgeon-general acting under the orders of a general officer commanding the lines of communication has the special direction of all the medical duties along the lines and at the base. He is responsible to the surgeon general-in-chief of the army for their regular fulfilment. The hospitals and the movements of sick along each road of communication are supervised by a deputy surgeon-general, acting under the directions of the commandant of the road. The charge of the advanced depôt is placed in the hands of a surgeon-major. At the base are three deputy surgeons-general, whose respective duties are indicated on the plan before you. It is at the base hospitals and in the stationary field hospitals along the lines of communication with the army that the regulations direct all civilian surgeons and other persons affording voluntary aid to the sick and wounded to be employed.

The establishments with the army actually operating in the field must now be glanced at. They are of three kinds: (1) The regimental establishment. (2) The bearer company. (3) The field hospital. It will be more convenient to trace these from the front to the rear, from the fighting line to the line of the field hospitals, this being the direction in which help has to be afforded by them on the occurrence of an action with the enemy.

The first surgical establishment belongs to the battalions and other bodies of troops composing the brigades and divisions of the army, and is of a very spare character. It is only organised for giving temporary help during halts of the troops on the march, or, in case of action, affording such primary aid to the wounded as may be necessary before the second establishment, the bearer company, can reach the spot. Each corps has a surgeon with it, and two men of each company are trained as stretcher-bearers. These form the corps field surgical staff. The ordinary equipment consists of two "medical field companions," cases containing surgical materials and medicines, carried by straps over the shoulder, two water-bottles per company, and a stretcher per company, carried in the company cart. In case of a corps being detached on outpost or other duties larger cases, field panniers, carried on the backs of pack animals, and other equipment, according to circumstances, are supplied.

The second establishment, the bearer company, is the most important source of aid in case of the occurrence of an action, and is very fully and carefully equipped for its duties. It comprises the means of performing all surgical operations of urgent necessity, and of applying surgical dressings and giving preliminary aid to all the wounded, wherever they may be met with, before their removal to the field-hospitals in the rear. It is specially organised for giving this aid in a systematic manner at certain important stations: in the immediate rear of the fighting line—at places to which the badly wounded are first carried, and where they can be transferred to wheeled conveyances—and at the established dressing stations. It is by the bearer company that the wounded are removed from help-station to help-station, on stretchers from the place of fighting to the transfer or collecting station, by ambulance waggons from the transfer to the dressing station, and again from the dressing station to the field hospitals, and from them again subsequently to the advanced depôt. To accomplish all these purposes, each bearer company in the field has a considerable *personnel*, over 200 in number, allotted to it; medical officers, officers of orderlies, transport officer, men of the army hospital corps, stretcher-bearers, drivers, and artificers. The details of these establishments may be found in the Code of Army Medical Regulations. The equipment is also large, and includes all the supplies for forming the dressing stations, performing the necessary surgical duties, supplying medical comforts, the ambulance conveyances, and a variety of articles, the lists of which are also laid down in the Medical Regulations. Each bearer company is divisible into two "half bearer companies," with *personnel* and equipment complete for its duties. The whole company is under the command of a surgeon-major. Four such companies constitute a bearer column, the complement for an army corps; and one of these companies has its transport and equipment adapted for work in a mountainous country, where wheeled transport could not be employed. The command of a bearer company is a very responsible one; the movements of the company, whether in marching with troops, in camping, or in discharge of its special functions on the occasion of an action, have to be conducted with the same military discipline and precision as the movements of all other parts of the army; the bearers must be drilled and exercised in the proper modes of carrying the wounded, and both they and the men of the army hospital corps must be taught and practised in the modes of rendering first assistance in the absence of surgical aid. All this constitutes part of the work which is now systematically done in the Army Hospital Corps Training Depôt at Aldershot. I may here mention that arrangements have been kindly made by the principal medical officer and the medical staff at Aldershot, to receive a certain number of visitors who may wish to attend the bearer company exercises at that station on the 6th instant. It is all the more important that the duties of the bearer company should be performed with thorough efficiency, especially as regards the preliminary dressing and treatment of the wounded, as, owing to the great range of modern projectiles, the field hospitals, as shown by modern experience in European warfare, are often established so far away from the place of conflict that many hours may elapse before the wounded in the transport vehicles will be able to reach them and get fresh surgical help. This is especially liable to happen when an action only ceases as daylight is declining, and the roads between the battle ground and the places where the field hospitals have been established become encumbered by military vehicles of all sorts, as well as by the movements of troops.

The field hospitals remain to be noticed. A great deal of thought has been given to the proper constitution of the establishments so as to combine qualities of portability and readiness at any time for use with the requisite efficiency. A field hospital must be so arranged as to be always within reach of the troops; ready for reception of the wounded from the bearer company, shortly after the occurrence of an action, with all requisite means for their protection, care, and treatment, for at least several days, if necessary; and it must be capable, as soon as the patients have been removed from it to the advanced depôt, to be quickly packed up again and ready for further movement forward, so as to be available for the reception of a relay of patients in case of another action with the enemy. The field hospital, as now arranged in the British service, is fitted for the reception of 200 patients. The requisite number of tents, each calculated for four patients, is carried for accommodating the whole number, but if a farmhouse with outbuildings be available, or suitable houses in a village can be obtained, the tents would probably not be employed. Each field hospital has its *personnel*, equipment, and transport so arranged as to be capable of division into two half-field hospitals complete for 100 patients. Twelve field hospitals form part of each army corps, two being allotted to each division of the army corps, the remaining six being reserved for disposal wherever they may be specially needed. In addition to four store waggons for the ward and cooking material and medical stores, four for tentage and equipment, and two water carts, each movable field hospital has two pharmacy waggons, containing a complete equipment of instruments, surgical appliances, medicines, and means of dispensing them, with a stock of medical comforts. The contents of the waggons, and modes of packing them, the order to be observed on the line of march, and the plan of encamping a field hospital, with other details regarding such establishments, may also be found in the Army Medical Regulations.

It will be seen from the account I have just given that the regulated plan of medical and surgical assistance for troops on active service is a very complete one, and that it anticipates all the wants that are likely to occur during a campaign. It is obvious that to carry out the arrangements when the strain of a general action occurs, and help is demanded for a large number of wounded, previous training, intelligence, and active exertion on the part of all concerned will be necessary for success. An adequate staff is provided by the Regulations for the purpose. In addition to the special surgical and subordinate staff of the field hospitals and of the bearer companies the surgeon general-in-chief with the army corps has a deputy as a field-inspector, whose duty it is to see that the circulation of the system of help is properly maintained, two orderly medical officers, and other officers to assist him in his charge. Each division of the army has a deputy surgeon-general at its headquarters, and each battalion and separate corps its surgeons

In all these arrangements the calamity of a state of warfare in Europe has been particularly had in view. But even in other parts of the world, even in half civilised countries, the general principles of the system can be maintained; the manner in which they are carried out has alone to vary, according to the nature of the military operations, the condition of country, and other local circumstances.

The sketch I have laid before you of the existing arrangements for ensuring systematic help and skilled attention to the wounded in case of this country unhappily becoming involved in war has been unavoidably a superficial and imperfect one, and I must apologise for its incompleteness. The description, short and partial as it has been, may, however, not be without some advantage if it has succeeded in conveying a general idea of the arrangements under which any particular system of treatment, whether the strictly antiseptic treatment of wounds or any modification of it, will have to be applied among troops when on field service.

THE INTERNATIONAL MEDICAL CONGRESS.

THE OPENING MEETING.

LONG before 11 o'clock, the hour announced for opening the meeting, St. James's large hall was filled in every part with an audience the like of which has never met before, and in all probability will never meet again in the lifetime of the youngest member present. We cannot even attempt to enumerate the illustrious scientists and medical practitioners who there gathered together, but among those on the platform, in addition to the Executive Committee, we recognised Cardinal Manning, the Archbishop of York, the Bishop of London, Canon Barry, Langenbeck, Virchow, Charcot, Pasteur, Volkmann, Esmarch, Küster, Pancoast, and others of equal eminence.

The reception given to H.R.H. the Prince of Wales was a clear indication of the loyalty of the profession, and of the gratitude felt for the marked honour he has paid it in taking so active a part in the proceedings of the Congress. The reception by all upstanding was only equalled when in the middle of the meeting H.R.I.H. the Crown Prince of Germany entered.

The chair was taken by Sir W. Jenner, who was received with long-continued applause when he rose. He said: When our most gracious Sovereign Her Majesty the Queen, whose sympathy with suffering is so real and deep, and whose interest in the advance of medicine and in all good works calculated to alleviate suffering is so well and widely known, consented to be patron, and to allow her likeness to be stamped on the medal struck in commemoration of the Congress, its success was ensured. And when, further, His Royal Highness the Prince of Wales graciously consented to open the Congress, a guarantee was given to the world that our meetings would be conducted with gravity and dignity, and that the matters discussed at them would in nature and in importance be worthy of the members of a learned and time-honoured profession. It would be contrary to my sense of propriety, and tedious to you, were I to detain you from the official and proper business of the Congress by any lengthened remarks. But it would be scarcely courteous to you, or congenial to my feelings, were I not to express, however briefly, what I believe to be the sentiments which animate, and the objects and aims of those who, responding to the invitation of the General Committee, have come, not only from all parts of Her Majesty's dominions, but from nearly all the schools of the world in which advances in medical science and practice are being made, and from which, by means of their pupils, medical science and the practical fruit it bears are being constantly diffused throughout all the world. We are told that commerce is the golden girdle of the world—binding nations together by common interests and common aims; but science binds men and nations together by a girdle the links of which are far stronger, more durable, and more precious than are those of the golden girdle of commerce. Knowledge is, indeed, in very truth more precious than gold:

> "Who loves not knowledge? Who shall rail
> Against her beauty? May she mix
> With men and prosper? Who shall fix
> Her pillars? Let her work prevail."

With every increase in the world's stock of gold the metal loses something of its value, while every addition to the world's store of scientific truth adds to the value of that it already has, and is a step to the acquisition of more. And if this be true of science generally, it is true in the highest and broadest sense of the word of the science of medicine. Commerce is fettered in the supposed or real interests of nations; it separates as well as binds together. Discoveries in the application of other practical sciences are often stayed from their widest spread for the pecuniary gain of the discoverer. But discoveries in scientific and practical medicine are free to all the world, to use in themselves or as foundation for further advance. The less the physician working to advance medical knowledge is animated by desire for pecuniary gain, by feelings of personal ambition, or by desire for common applause, the less he mingles himself, his personal wishes, with his work, the less he allows his hopes and fears to give a bias to the result of his labour or pervert the meaning of the answer Nature gives to his questions, the more he exhibits in his researches the desire to know the truth for the sake alone of knowing the truth, the greater the relief he affords by his researches to the present suffering of humanity, the more those researches tend to prevent the recurrence of suffering; and the more just and generous he shows himself in appreciating the opinions and the work of others, the nearer will he approach to the ideal you and I have formed of the worthiest workers in our science. We have all known men who have approached this ideal; but of all those that I have known, there is one that stands out so pre-eminently above all others that I must mention him. I refer to that absolutely typical scientific physician—whose museum I trust you will all visit—Edmund Parkes. All medical discoveries are common property, and the richest reward the advancer of scientific and practical medicine can have is the consciousness that by the wide diffusion of the results of his labours lives have been saved, sufferings alleviated, or disease prevented. The assembling of this great Congress is in itself an illustration of my remarks. You are here to spread the truths you know, to learn from others the truths they have to tell, to give your knowledge freely and to receive from others as freely the knowledge they have to bestow, and in the giving as well as in the receiving to increase your own store. You are here to thresh out by argument the corn of truth from the wordy chaff in which it may be enveloped, to elicit the truth from seemingly conflicting statements of what the truth is. You are here to speak to one another face to face, and so we hope to remove prejudices, to promote kindly feeling, to renew old friendships and lay the foundation for new, and generally by personal intercommunion to knit more closely the bonds of that professional brotherhood of which we are all so rightly proud.

Mr. WILLIAM MAC CORMAC, the Hon. Secretary-General, who was most cordially received, then read the Report of the Executive Committee, in which reference was made to the origin of this meeting, to the steps taken to render it truly international, and to the great success which had attended the efforts made. A brief outline of the work of the Congress was also given.

Sir RISDON BENNETT moved a resolution accepting

the official list of officers nominated, and appointing Sir James Paget, Bart., President of the Congress, and Mr. W. Mac Cormac Honorary Secretary-General. He admitted that to ask them to pass such a resolution was a sign of unbounded trust in the kindness and experience of the members of the Congress; but time would not allow of their taking separate votes. He bore testimony to the great and incessant labours of the Committee during many months, and to their great indebtedness to Mr. Mac Cormac, to whom every member owed a deep debt of gratitude, and which ought to be most heartily acknowledged. He then welcomed the foreign members of the Congress in a well chosen and well delivered speech in French.

Professor DONDERS (Utrecht), as president of the sixth meeting of the Congress at Amsterdam, seconded the resolution. He praised the arrangements made, and said they were a fresh proof of British skill and talent for organising. He believed that the meeting would largely contribute to the advance of science, and would supply the material for one of the most splendid pages in the history of medical science. The resolution was carried by acclamation.

Sir WILLIAM JENNER then presented the Congress Medal, in silver, to H.R.H. the Prince of WALES, which he was kind enough to accept.

Sir JAMES PAGET then took the chair, amid loud applause.

The PRINCE OF WALES, who warmly shook hands with the newly-elected President, then rose and said: Sir James Paget, your Imperial Highness, and gentlemen, I have gladly complied with the request that I should open the International Medical Congress of 1881. Amongst my reasons for so doing was my conviction that few things can tend more to the welfare of mankind than that educated men of all nations should from time to time come together for the promotion of the branches of knowledge to which they devote themselves. The intercourse and mutual esteem of nations have often been advanced by great International Exhibitions, and I look with pleasure to those with which I have been connected; but when conferences are held amongst those who in all parts of the world apply themselves to the study of science and to scientific professions, even greater international benefits may, I think, be confidently anticipated. More especially is this so in the study of medicine and surgery, for in these the varieties of climate, of national habit, and of social life, must give to the practitioners of each nation opportunities of acquiring knowledge which is of considerable value, not to themselves alone, but to those of other countries whom they may meet in congress. I venture to think, gentlemen, that the executive committee have acted wisely in instituting sections for the discussion of the very wide range of subjects, including the sciences, on which, as foundations, medical knowledge must rest as well as many of their most practical applications. I am very happy to see that so great a scope will be granted to the discussion of the important questions relating to public health—to the cure of the sick in hospitals, in the houses of the poor, and to the welfare of armies and navies. The devotion with which the members of the medical profession are ready to share in the dangers of climate, the fatigues of war, and to study every means not only for the remedying but for the prevention of disease, deserves the warmest acknowledgment from the public. Gentlemen, I have great satisfaction in believing, when I see this crowded hall, that I may already regard the Congress as being very successful in having attracted in numbers hitherto unequalled medical men from all parts of this kingdom, as well as from every country in Europe and from the United States of America. The list of officers of the Congress, including as it does the names of nearly every one distinguished in Great Britain in any branch of medical science, shows how heartily the proposal to hold this meeting in London was received; and I think it speaks well for the good feeling of the profession that there was so warm a response from abroad. How cordial it was may be seen not only in the large number of our visitors, but in the fact that they include a great proportion of those who enjoy the highest reputations, not only in their own country, but throughout the world. I sincerely congratulate the general executive and reception committees on this good promise of complete success, and I trust that at the close of the Congress they will feel that they have been rewarded for the labour which they have bestowed upon it. The report which the honorary-general-secretary, Mr. Mac Cormac, has read, will have explained how great has been the toil. It will, however, be well repaid, and I am sure that Mr. Mac Cormac will be sensible that he will be recompensed for his constant exertion and care, if the improvement of the science of medicine be materially promoted, for the knowledge of medicine must always be followed by increase of the happiness of mankind. Gentlemen, I declare this Congress now open.

Sir JAMES PAGET then delivered his address, which will be found on another page, and subsequently the meeting broke up.

The Sections met at 3 P.M., and were largely attended. In nearly all the presidents delivered addresses.

At 4.30 P.M. Professor Virchow delivered his address in German, of which we publish a translation. St. James's Hall was well filled with an appreciative audience, who gave the great scientist a worthy reception.

At noon the Prince of Wales honoured Sir James Paget with his company to lunch, and a select party was invited to meet His Royal Highness. In the evening the Prince of Wales, the Crown Prince of Prussia, and Prince Henry of Germany dined at Willis's Rooms with Sir William Gull and a party of over 100 members of the Congress. In returning thanks for the toast of his own health, the Prince of Wales spoke of the unique character of the present gathering, and expressed his conviction that the Congress could not fail to be of the utmost service to the whole world, and wound up his speech by the words, "*L'union fait la force.*" His Imperial and Royal Highness the Crown Prince of Germany replied to the toast of the distinguished foreign guests. The Prince of Wales, in proposing Sir W. Gull's health, expressed in the warmest terms his personal gratitude for his attention during his long illness; and Sir W. Gull, in reply, disclaimed the sole credit of the attendance on the Prince, and spoke in high terms of the cordial and brotherly assistance he had received from Sir W. Jenner.

THE CONVERSAZIONE AT SOUTH KENSINGTON.

The conversazione, given by the English members to the Congress, was attended by over 5000 persons, but there was abundant accommodation for even this large number in the spacious courts, picture galleries, and garden. The arrangements were excellent. There was no overcrowding even in the refreshment-rooms, and its perfect success is the result not of chance, but of skilful arrangements. The Prince of Wales and his illustrious brother-in-law also honoured the Congress by attending this soirée and by staying a considerable time. And thus ended a day marked by gatherings unique in character and interest, and it is no exaggeration to say that the most captious critic would fail to detect a single failure of the arrangements at any point.

The College of Physicians has worn an air of very unwonted activity all this week. On Monday and Tuesday there was an incessant stream of men from all countries registering their names as members of the Congress, and on the latter day alone some 800 names were added to the list, which now reaches 3000. A considerable number of the Executive Committee were present at the reception on Tuesday afternoon, which was largely attended by visitors to the metropolis. In the evening various private entertainments were given, among them being a reception by the Hon. Secretary-General at his private house, which was attended by several hundred members, including some of the most distinguished of the foreigners. Mr. Rogers on the same evening received the members of the Odontological Section and some others at the Marlborough Rooms.

It has been arranged that a special demonstration of a Stretcher Corps and stretcher practice shall be given before

the members of the military section at Aldershot, on Saturday, August 6th. On Sunday next, at the special service at Westminster Abbey, Canon Barry will preach. At the service at St. Paul's Cathedral 600 chairs will be reserved for the use of the members of the Congress. On Monday, Professor Volkmann will give his address at a general meeting, as originally announced, and not at the Surgical Section, and Professor Huxley's address will therefore come on Tuesday afternoon. The Baroness Burdett-Coutts Bartlett has sent an invitation to 500 members of the Congress to a garden party at her house at Highgate, on Monday next.

THE INTERNATIONAL MEDICAL CONGRESS.

THE following is the daily programme, complete up to our going to press:—

Friday, Aug. 5th.

10 A.M. to 1 P.M.: Meetings of Sections.
12.45 P.M.: Visit to Mr. Penn's Works at Greenwich.
1.30 P.M.: Visits to Hospitals.
Demonstration of Natural History Collection at South Kensington by Professor Owen.
2 P.M.: Meetings of Sections.
4 P.M.: General Meeting. Address by Dr. Billings.
8 P.M.: Conversazione at the Guildhall.

Saturday, Aug. 6th.

10 A.M. to 1 P.M.: Meetings of Sections.
12.15 P.M.: Excursion to Croydon Sewage Farm.
1.45 P.M.: Excursion to Folkestone—Unveiling of Harvey Memorial Statue.
2 P.M.: Excursion to Hampton Court, and Garden Party at Normansfield, given by Dr. Langdon Down.
4 to 7 P.M.: Reception at Kew Gardens by Sir J. D. Hooker. Garden Party at Hampstead, given by Mr. and Mrs. Spencer Wells. Garden Party at Wimbledon, given by Mr. and Mrs. Saunders.
6.30 P.M.: Dinner at Richmond, given by the United Hospitals Club. Reception by the Foreign Secretary to the Foreign Members of the Congress.

Sunday, Aug. 7th.

10 A.M.: Full Choral Service, and Sermon by Canon Barry, in Westminster Abbey.
3.15 P.M.: Full Choral Service, and Sermon by Canon Liddon, in St. Paul's Cathedral.
1.30 P.M.: Excursion to Boxhill.
The Gardens of the Royal Botanic Society, Zoological Society, and at Kew and Hampton Court, will be open to Members of the Congress.

Monday, Aug. 8th.

10 A.M. to 1 P.M.: Meetings of the Sections.
11 A.M.: Visit to the Docks.
2 P.M.: Meetings of Sections.
4 P.M.: General Meeting. Address by Professor Volkmann. Garden Party by Lady Burdett-Coutts Bartlett.
6.30 P.M.: Dinner given by the Master and Wardens of the Society of Apothecaries.
9.30 P.M.: Conversazione given by the Royal College of Surgeons to the members of the Congress.

Tuesday, Aug. 9th.

10 A.M. to 1 P.M.: Meetings of Sections.
2 P.M.: General Meeting. Address by Professor Huxley.
4 P.M.: Visit to the Crystal Palace; Informal Dinner, and Display of Fountains and Fireworks &c.

During the week of the Congress Messrs. Spiers and Pond will set apart for members their Victoria banqueting room for a lunch at 2s. 6d. per head from 1 to 3 P.M., and for dinners and other refreshment at all hours. The Café Monico will provide a luncheon for 1s. 6d.

The General Meetings will all be held in St. James's Hall; the Sections meet in the University of London, Burlington House, the Royal Institution, the Asiatic Society's Rooms, and the Royal School of Mines; the various Offices of the Congress are in the Rooms of the Royal College of Physicians, Pall Mall East. Members will be required to show their tickets at each meeting.

SUNSTROKE.

To the Editor of THE LANCET.

SIR,—The accounts in the daily papers of the numerous sufferers from "sunstroke" are alarming, and claim some attention from the profession.

I am not acquainted with the death-rate from this accident in this country, but in tropical climates, according to Tanner and other writers, it ranges so high as from 40 to 50 per cent.

To the question, What is sunstroke? medicine cannot give a satisfactory answer, nor, judging from its mutability, can it offer the sufferers any definite and effectual aid. The treatment for sunstroke has hitherto been cold in various forms. Iced water to the head, iced drinks, and the wet sheet, to subdue the abnormal heat of the body, have been the principal means hitherto employed. But the symptoms of sunstroke all point to shock, or severe depression of the nervous system, the abnormal heat being the result of this shock or nervous depression. If this be a true account of the chief symptoms of sunstroke, are we not on the wrong track in our treatment? And would not the application of heat, instead of cold, be the more likely and rational remedy?

I forget when, but I think two or three years since, I heard or read of the application of heat in sunstroke in the form of hot bricks wrapped in flannel, hot flannels to the head, &c.; and I believe also that my information came from a non-professional source. But professional or non-professional, it was claimed for this treatment that it had been more successful than the old treatment by the application of cold. The excessive heat of the weather this year, and the prevalence of sunstroke, have brought the subject to my recollection again; and my object in this note is to suggest that the treatment of sunstroke by heat instead of cold may be worth a trial. Do we not find the greatest possible relief from a hot bath when we are fagged and worn by the worry of business and the anxieties of life? Was there not a grain of common sense at least in the proceedings of our forefathers, when they treated shock and nervous depression by wrapping the patient in the skins of animals recently removed? And lastly, is not this sunstroke a parallel case? I remain, Sir, yours obediently,

Lynn, July 25th, 1881. J. M. DALE, M.D. Lond.

SANITARY INSPECTION OF LODGINGS.

To the Editor of THE LANCET.

SIR,—In reply to your remarks upon the above subject, you will be glad to hear that the urban sanitary authority of Ramsgate has done something in the direction of an inspection of hotels, lodgings, &c., and has urged the occupiers of houses to secure what you justly term the "highly marketable guarantee of a sanitary inspection." Six months ago a notice was inserted in the local journals advising the hotel-keepers, lodging-housekeepers, and others, that a certificate would be granted on application if, after an inspection by the medical officer of health and surveyor to the sanitary authority, their premises were found to be in a good sanitary condition. I may add that no certificate has been granted unless the house was properly connected with the main sewer, the drains efficiently trapped and ventilated, a good and sufficient water-supply, and the house generally in a satisfactory condition; and that as these conditions have entailed, in most instances, some structural alteration in the premises, it is evident that a very decided improvement must be taking place in the sanitary arrangements of the houses in this district. Numerous applications have been made for these certificates, and many granted to the hotel-keepers, lodging-housekeepers, and occupiers of private houses and schools.

I am, Sir, yours faithfully,

EDWARD WALFORD,
July 28th, 1881. Medical Officer of Health, Ramsgate.

P.S.—I am glad to say that I have the ready co-operation of the other medical men with regard to the early notification of infectious diseases; moreover, the sanitary authority has authorised the fee of 2s. 6d. to be paid for each such notification.

ROYAL COLLEGE OF SURGEONS.—The examinations for the present session were brought to a close on Friday last, the 29th inst., when 215 candidates for the diploma of membership of the College had been examined; of this number no less than seventy-six failed to acquit themselves to the satisfaction of the Court of Examiners, and were consequently referred to their professional studies for six months; twenty-four passed in surgery, and when qualified in medicine will be admitted members of the College. Eight candidates who had passed in surgery at previous examinations, having subsequently obtained a medical degree or licence recognised by the College, were admitted to the membership. The following is rather a gloomy picture of the present generation of students who presented themselves for examination on this occasion: as many as thirty-three paid their respects to the Court a second time, sixteen for the third time of asking, three for the fourth time, and one for the fifth time, and many of them were again sent back to their hospital studies.

THE LANCET.

LONDON: SATURDAY, AUGUST 6, 1881.

ALTHOUGH it has long been known that the seventh meeting of the International Congress would be attended by larger numbers of medical men than had ever met together at any previous gathering, it has yet required the actual experience of this week to demonstrate the enormous dimensions of the Congress now assembled in London. It is difficult to speak in any measured terms of the extreme interest of this meeting. Not the least striking feature in it is the evidence borne to the cosmopolitan nature of science, to its wide embrace, and to its power to overcome the strong barriers set up by history, race, language, and creed. To find men of the highest eminence and worth hurrying from all parts of the civilised world to meet in congress for a few short days, and be as of one great family, calls up a vision so often pictured by reformers — the true solidarity of nations. Amid the many jealousies of country and of creed it is of no small value to find that there is a platform on which all are glad to meet for one common purpose, however much they may vary in education or political and social advancement. There can be no reasonable doubt that this International Congress will form a landmark in the history of medicine. It has met at an auspicious moment. The last half century has witnessed such an outburst of interest in the science of life in all its phases, has seen such a large addition to the number of patient labourers in the many parts of this great field, all actuated by high motives, and possessed of great energy and enthusiasm, and as a result has been characterised by such additions to our knowledge and advance in the practice of our profession that at no former time could such a meeting have been so opportune. And there are still among us so many of those who have borne the burden and heat of the day, whose names will always be familiar to the students and practitioners of medicine in all times, and who are now approaching the end of their labours, that delay might have robbed the Congress of some of its brightest ornaments. But is the Congress to mark the close of a golden era of scientific research? The immediate past owes its rich results to the liberty which scientists have everywhere enjoyed in their investigations. The opposition to science long raised by ignorance of its true nature, aims, and methods has gradually vanished, and the work has progressed unfettered by outside restraints. Are these conditions to suffer change? Have not the results been so vast and so beneficial to the whole human race that we may point to them with just pride as we protest against any restrictions being raised in the future other than those suggested to every enlightened mind? To limit the search after scientific truth is to stop that search in its entirety. Who can hold in check the human mind? Who can direct the channels along which thought shall flow? And as in times past truth has only been reached by excursions into the unknown, of which the end has not been seen until reached, so it must be in the future. Actions may be rendered uniform, a man's limbs may be bound or made to move in strict obedience to outside powers, but none can say to the human mind, "Hitherto shalt thou come, and no further"; it knows no chains, it brooks no limits. Let us hope that the threatening of an attempt on a wide scale to regulate scientific research may prove abortive; but be that as it may, this Congress will do much not only to strengthen the ties of unity between man and man, but will also arrest the attention of the laity, and force them to examine into our claims for sympathy and help.

Thus far the Congress has proved a success beyond the most sanguine hopes. The Executive Committee are to be most heartily congratulated on the results of their labours, which have been very arduous. It is no easy matter to settle the countless details that to those outside seem merely commonplace. To have succeeded in bringing together scientific and practical physicians and surgeons from all parts of the world in unprecedented numbers, and in providing both for their entertainment and scientific instruction converse and discussion, is a proof that neither energy nor skill has been wanting in those at the helm. We must not forget, however, that the brunt of the work has necessarily fallen, after all, upon one or two, and particularly upon Mr. MAC CORMAC. The tact and devotion he has displayed are too well known to all interested in the proceedings to require mention. All we have to do now is to congratulate him most heartily on the result of his labours—a success that has never been equalled in the past.

The opening meeting of the Congress, on Wednesday morning last, was a gathering the like of which has never been witnessed before, and in all probability will never be paralleled in our day. If a list of the names of those present could be published, it would form an almost complete enumeration of the scientific workers in medicine and skilled practitioners of our art. To collect in one room workers whose honest labours have made them illustrious throughout the world, not by tens, but by hundreds, not from one country, but from all the civilised peoples of the world, is a feat which had never before been attempted, and afforded a spectacle never equalled in scientific interest. Men who have given themselves to the pursuit of those sciences on which all rational medical practice is founded were there; men who have busied themselves with bringing one after another of the physical forces of Nature to the aid of man's senses and limited powers were there; men who by incessant observation have brought the art of diagnosis to a near approach to perfection were there; men whose daily labours are cast in an often weary routine of practical duties to all classes of their fellow-men were there. And all were met for one purpose — to strengthen each other's hands; with one emotion—common brotherhood. It demonstrated again the power of truth. We are united by our common truths; if we are separated at all, it is by errors or misapprehensions of the truth, and such a reunion of different minds attests the strength of those truths to which Sir W. JENNER so aptly referred in his speech. Among the faces known and unknown that were thus, for once only, gathered together in St. James's Hall, we, however, missed some, and we may

be pardoned for referring to the absence of three on account of the infirmities of age or affliction—Sir THOMAS WATSON, Professor GROSS, and Professor BILLROTH. So great was the gathering, however, and so wonderfully complete, that it was hard to realise that they were not there—indeed, they were there in the persons of many of their pupils.

The PRINCE OF WALES evidently realised to the full the importance and interest of the occasion to which by his presence and words he added so much grace and dignity. The Royal Family has ever been forward to recognise the value of the services of the profession; and the Prince himself has unfortunately had abundant cause in his own person to appreciate the worth of the highest medical skill. His Royal Highness's speech was marked by an accurate gauge both of the part medicine plays in the life of a nation and of the importance of this Congress. The meeting was further honoured by the presence of the Crown Prince of GERMANY, than whom no one has greater reason to value the services rendered by prompt and efficient surgery in times of great emergency. His presence testified to the fact that the practitioners of the art have been found able to cope with the gravest difficulties. While Princes see so much to remind them of the divisions among nations, it must have been a matter of no little interest to these heirs to two of the greatest thrones in the world to have such a proof that there is much that binds men together. By patronising such a Congress they were aiding in the highest work open to them—the binding of nations in one common bond of esteem, respect, and mutual toleration.

Sir WILLIAM JENNER'S speech was eminently characteristic. The words in which he spoke of the value of medical science, of its superiority to other pursuits, were noble words, that, once spoken, should never be forgotten. They express briefly, tersely, and well the principles that should actuate all scientific men and the aim especially of all medical practitioners. The constant contact with men of other callings, keen competition, the difficulty of keeping straight on in one's course, never swerving to right or to left, all concur to lower the tone of professional life and feeling. It is necessary, from time to time, to be awakened out of slumber by the clear trumpet-call to duty, and Sir WILLIAM JENNER availed himself of his position in a manner that ought to be useful in the highest degree. It is not a slight matter to have a high clear ideal always before us; but the circumstance which, after all, gave full weight and charm to Sir WILLIAM'S words was the fact that they were spoken by one whose professional life has been an embodiment of the high principles and aims he inculcated.

When it was announced that Sir JAMES PAGET was to be President of the Congress, one thing was rendered certain, and that was the delivery of a presidential address which would be remarkable as a scientific production and an oratorical feat. On the many hundreds of those who had the privilege of listening to Sir JAMES but one effect, of great delight, was produced. To all our readers he is so well known that we have only to assure them that the address amply maintained Sir JAMES'S high reputation as an orator to convince them of its excellence from this point of view. But we hope it will be carefully read for its deeper worth. His reference to the personal element in any observation, and the consequent need for many minds to observe the same fact, was a stroke of genius. Again his weighty words on specialism, its need, within certain limits, and its dangers, were most opportune. And, the same high tone of thought and feeling characterised each utterance from commencement to close. The true spirit of science was shown in his clear utterances on the steady progress of truth, on its boundless expanse, its never-ending development, and in his refusal to think or to speak of any finality in it; while a high realisation of the responsibilities of the profession alone could have prompted his words on the true practice of charity. Lovers of their work will find a noble stimulus to fresh labour; those half in doubt as to the direction in which all the change of the present period is tending will find grounds for calm assurance, and to one and all the address will commend itself as beautiful and wise. The occasion was great. It had never occurred before, it may never come again; and if but this address were to be handed down in history as the record of this great Congress, it would, for its eloquence, its scientific inspiration, and its nobility of thought, be worthy of the honour.

Professor VIRCHOW is, perhaps, of all scientific men living one of the most famous. It was but fitting that he should take an active and even prominent part in the work of the Congress. We publish in another place a translation of his remarkable address on the value of pathological experiment. In this subject the orator was peculiarly at home, and the address will be found to be a most able demonstration of the enormous good that has accrued to mankind from pathological experiment, and a timely and noble protest against the mistaken and at times ignorant attempts of those who desire to fetter one of the most valuable methods of prosecuting the search after truth. To his already pronounced enemies VIRCHOW will, we fear, speak without avail. But his words ought to have weight with that far larger class who have better control over their emotions, and are not blinded to great facts and necessities by the unbalanced influence of a feeling excellent in the highest degree when restrained and allowed to flow in proper channels. In this address VIRCHOW speaks not only to Englishmen, but to men of all countries. For it is not we alone who are suffering under a restriction of liberties previously unknown. The same is threatened on the Continent, and we much mistake if VIRCHOW'S words do not become historical in a contest, to secure victory in which will need the exercise of the utmost skill and patience on the part of the profession.

THE letter of MR. TIMOTHY HOLMES on the scheme for establishing Provident Dispensaries over London through the co-operation of a Limited Liability Company, which we published last week, will be read with interest by all our readers. If MR. HOLMES speaks at a disadvantage as a hospital and consulting surgeon, at some distance, as it were, from personal contact with the subject, he speaks with the weight of one who has taken a great deal of disinterested trouble to understand the very complicated question of how to secure the best medical attendance on the working classes, with the least damage to their sense of

independence and their respect for medical services. These two things must be conserved, and they must be conserved together. It does not follow necessarily that a man will be a better man or think more adequately of medical service by paying a small pittance for it than by paying nothing at all. Mr. HOLMES will not maintain that a hospital patient on whom he might perform lithotomy would be more benefited or would think better of surgery by being made to pay five shillings for it than by receiving the service gratuitously; it is not otherwise with the cure of a pneumonia. We receive with much satisfaction his assurance that the promoters of this scheme are anxious to avoid the imitation of those institutions which, like the Norwich Institute, set a low value on medical services, and that they have anticipated our advice to take the well-established sick clubs as a guide. It is well to know that Mr. HOLMES'S support of the scheme depends on the recognition by the promoters of the necessity of an adequate remuneration of medical officers. Mr. HOLMES does not remember being present at any meeting at which such institutions as the Norwich one were held up to admiration. We willingly accept his personal disclaimer on this point. There is another matter to which we should be glad to know that his attention has been directed—viz., the importance of making provision in the scheme for the exclusion of unfit persons. It is manifest that shabby people, as well as those of humble resources, will be apt to avail themselves of such easy and elaborate means for their relief, and that people who would be cheaply doctored at four guineas a year will try to get doctored at four shillings. In Manchester a plan very similar to this London scheme is being carried out, and great offence has very justly been given to the profession there by the wholesale casting of the net and the indiscriminate admission of members without reference to their means. Mr. HOLMES will easily see that by such a system as this more harm and injustice may be done to the hard-worked and ill-paid members of the medical profession than by what he calls the vast system of indiscriminate out-patient relief at hospitals. It is the fear of seeing introduced into such schemes low standards of payment and undiscriminating and uneven terms of membership which makes us doubtful whether they are really likely to benefit either the profession or the working classes. It is not clear to us that the institution of Co-operative Provident Dispensaries will practically touch the out-patient abuse, the amount of which we have always thought somewhat overrated, and the curtailment of which would seriously impair the means of medical education. Mr. HOLMES'S letter shows that the principal classes contemplated are those that are already provident and capable of taking medical care of themselves. "We can only enlist the necessary number of members by the co-operation of the large Friendly Societies." Quite so. But surely this involves much more than dislocation of arrangements already existing between these societies and their medical officers? It is true that the medical arrangements of Friendly Societies do not always take cognisance of wives and children. But their members are universally provident men, who will spend more on medical services for the year at present—even with an occasional resort in emergencies or in prolonged cases to the much maligned gratuitous out-patient system—than they will under many of the schemes which are now thought to be effectual for destroying the spirit of pauperism.

M. CH. ROUGET pointed out, nearly twenty years ago, that in the living smooth muscular fibres of the invertebrata alternate clear and dark bands may be seen presenting a close analogy with true transverse striæ, and that the same transverse striation may sometimes be perceived in the muscular fibres of the dartos in man and of the gizzard in fowls. He has lately endeavoured to determine the conditions which cause this appearance, and has communicated his results to the Académie des Sciences. He finds that the striæ cannot be seen in the muscles when they are in a state of relaxation, but only when they are alive and in active contraction. If a bundle of smooth muscular fibres is taken from a living animal, and the fibres are separated in a liquid, they are usually bruised and broken, and some of the fragments present the striation, while others do not. These differences are accounted for by supposing that some of the fibres pass into a state of contraction during the act of death; waves of irregular contraction occur, quite different from the normal contraction, with which they are often confounded. A regular, tonic, normal contraction may be produced in the smooth muscular fibres of the invertebrata by a section made during life perpendicular to the direction of these fibres. The shortening which results may amount to half or even two-thirds of the previous length of the fibres. The contraction may also be produced or increased by mechanical stimulation, or by faradisation. A minute fragment then removed from the muscle in such a way as to avoid any extension or compression of the fibres shows a well-marked transverse striation in all the fibres. The dark bands are two or three thousandths of a millimetre in width, and are separated by clear bands of the same width. The regularity and symmetry of the striation are perfect, and the striæ are at the same level in contiguous fibres. The striæ may be fixed by absolute alcohol, or preserved in a dilution of one part of alcohol to three of water, which permits after a few days the striated fibre cells to be readily isolated. There is, however, some loss of the striation in the process of dissociation. The unavoidable extension causes the fibres to resume their smooth appearance in the parts mechanically disturbed. This seems to show that the striation is really due to the fibres, in their contracted state, becoming wavy, presenting eminences alternating with depressions, which cause the appearance of alternate dark and light striæ. The fibre cells, when examined in polarised light, are uniformly doubly-refracting in their smooth condition. When contracted, however, they present, viewed in a dark field, an alternation of bright and dark bands, or if a film is interposed giving a purple tint, an alternation of purple, blue, or yellow bands. When a smooth fibre is accidentally or coarsely folded, the same alternation is seen at the folds. The smooth fibres of the adductor muscles of acephalic molluscs can be made artificially to assume all the characters of striated fibres. The animals are killed by exposure to steam, and after the fibres are killed, their temperature continues to rise until ultimately they shorten with such force as to separate one extremity of the muscle from its attachment. The fibres of this extremity, curled by the heat like a hair brought near

a flame, acquire by the physical changes a very fine and regular striation, as delicate and sharp as the striation of the fibres of an insect's wing, and, indeed, present the same appearance in ordinary and in polarised light. In this way a fibre which has lost all its contractility may acquire the exact optical characters of striated fibres under any influence which causes fine and regular foldings. The striation is produced by a change which occurs also during physiological contraction, and M. ROUGET promises in a future communication to show that the ordinary striated muscular fibres may have their striation completely obliterated by a forced extension, and that the mechanical conditions of their contraction may be realised by foldings similar to those which occur in the contracted smooth fibres.

CONCURRENTLY with the International Medical Congress, the Pharmacists are holding an International Congress in London, and whatever may be said about the one, it is impossible not to admit that the pharmacists have met to discuss matters of very great practical importance, and if only they can carry into effect their resolutions, their meeting will be productive of great good. International intercourse is now so free that the want of an international pharmacopœia is constantly felt. A prescription written in London cannot be compounded in any but the capital cities of the Continent with assured accuracy, and yet in all countries the same drugs are used. Science is more cosmopolitan than art. No doubt there are difficulties to be overcome in this task. For instance, we must consent to the introduction of the metric system; but the advantages to be reaped are so distinct that we trust the pharmacists will continue their agitation until rewarded by success. Closely connected with this reform is another proposition, to have a uniform strength for the preparations of the more potent drugs, such as aconite, opium, and strychnia. To secure this, which ought not to be difficult, would not only be a gain in itself, but we feel assured that the advantages experienced from it would be a great means of removing the difficulties in the way of an international pharmacopœia. The pharmacists of Britain are very anxious to take an active and official share in any further editions of the British Pharmacopœia: and indeed the separation between the practice of medicine and pharmacy has so progressed that this is a claim that we think ought to be recognised. With the increasing number of drugs, and the greater knowledge of pharmaceutical chemistry, a large portion of the work of editing a pharmacopœia requires special training, and we believe the profession would welcome any feasible proposal to have help in this direction from thoroughly educated pharmacists.

THE meeting in St. James's Hall called together by the Defence Association, though not a large one, will serve to help the cause of Reform. The fact is that the demands of the profession have been formulated for so long a time, and in such various ways, that it is felt the time has come now for the Legislature to act without further importunity from the profession. The meeting will serve to convince the Royal Commission that the aim of reformers is not of a mere selfish trades-union sort, but a veritable amendment of the machinery for educating the medical profession, and for enabling the public, in the language of the Act of Parliament, "to distinguish qualified from unqualified practitioners." The resolutions nearly all referred to the nature of the examining boards and the composition of the General Medical Council. The note of the resolution passed on the last of these two subjects was clear and comprehensive—to the effect that no change will be satisfactory which does not include both the direct representation of the profession and an abatement of the representation of the corporations. Dr. JACOB well said that there were bodies represented which had no claim to further representation. On the subject of the nature of the three Examining Boards which are to license men for the future, the meeting was not explicit further than to call for a State Board. The meeting was unwilling to say that this should be "in place of" the existing boards. But it is quite clear that we cannot have two sets of boards. Either the existing boards must be made efficient, and be so constituted and regulated as to be above suspicion of competing with each other, and of inequality in their terms, or they must be superseded by boards perfectly independent of all money considerations in the exercise of the examining and licensing powers. The chief corporations—that is, the Royal Colleges in each division of the kingdom—may be utilised for the creation of what will virtually be a State Board under the control of the General Medical Council. This is really the true conservatism, to save the chief corporations by allowing the superseded and superfluous ones "to cease and determine." The creation of an independent State Board would be the most thorough reform, and it is one which we have always advocated; but if the great corporations are wise, and will consent to subordinate their interests to those of the public and to the control of a reformed Medical Council, they may yet be saved, or at any rate have a further lease. Dr. GRANT of Canada bore satisfactory testimony to the working there of direct representation, and to the effect of a better preliminary culture in raising the whole standard of medical education in the Dominion. On the whole, the general tone of moderation and prudence of the meeting will tend further to convince the Medical Commission that the medical profession has no low demands to make; and that while expecting some further security for the sacredness of medical titles and the privileges of registered men, it is equally concerned for the interests of the public and the efficiency of the Medical Act.

Annotations.

"Ne quid nimis."

HOSPITAL MISTAKES.

THE last reported scandal of the out-patient department is at the Middlesex Hospital, and should hasten the introduction of some very considerable reforms in hospital administration. A sweep, who had fallen from the top of a house on the preceding day, was taken to the hospital. He was of course not very clean, and the house-surgeon thought he detected scabies. On this ground the house-surgeon declined to admit him, and recommended his removal to the Workhouse Infirmary. The sister of the sweep having no money, the hospital, through the house-surgeon, paid the fare. At the parish infirmary the man was kept waiting two hours before admission. He does not seem to have been

thoroughly examined here, in consequence of the prominence given to the skin condition by the house-surgeon of the hospital. In a few days the man died, and was then found to have a fracture of the clavicle and of two ribs. The lamentable results of the error are so obvious that we will not dwell on them. But it is high time to demand that the out-patient department of the hospital system shall be administered with more care. A man who has fallen 25 ft. should find at least temporary accommodation and a bed in a public hospital under any circumstances. The condition of his skin should never disqualify a person who may have suffered grave injuries from being accommodated in a hospital until the nature of his injuries has been fully ascertained. Even if there is no serious injury he is entitled to this amount of sympathy and attention. At any rate a house-surgeon should not have the power to dismiss him without a consultation with a higher and permanent official of the hospital. Such cases are becoming painfully common. They are only a part of a general laxness in the whole casual and out-patient department, which is partly encouraged by the light way in which this department is spoken of by some hospital reformers. No skill is too great for a sufferer in bed, but a patient in the casualty room is too often relegated to an inexperienced dresser or house-surgeon. This subject is urgent, and demands the immediate attention of all hospital authorities.

STREET CRIES AND NOISES.

STREET cries and noises have from long past times been held to constitute one of the most characteristic nuisances of life in London. Of late years the evil has occasionally seemed for a while to abate under the influence of some momentary agitation on the subject, or in consequence of a passing protest of more than common energy. There has, however, been little or no permanent improvement. If the cries and noises are not so numerous and various as they used to be, the sum total of the disturbance is not sensibly reduced, and the infliction becomes each year more insufferable. Possibly part of the sense of increase, or greater intensity, which this nuisance produces in the mind, is due to the fact that business of every class and kind is becoming more a matter of brain-work than it used to be. The men of business of to-day are certainly not, on the average, less strong and clear-headed than their predecessors in commercial industry and enterprise, but they are more "worried" and *nervous*—that is to say, lacking in nervous strength—than those who went before them. This deterioration in staying power and temper is the penalty we have to pay for enhanced acuteness and more "intelligence," of the sort which earns for its possessor the prestige of cleverness. The typical commercial intellect of this last quarter of the nineteenth century is a more highly developed, and proportionally less stable, constitution of mind than that which sufficed for the enterprise of fifty years ago. A corresponding change has taken place in the type and character of mind in all its specialties of development. Children are more precocious and superficially "quick" of intellect than formerly. Youths of both sexes are more forward than persons of the same age were wont to show themselves in the time of our grandparents. Men and women attain their maximum of wit and ability at an earlier age, and, perhaps, the old live on in a state of mental as well as physical activity a little longer than those of two generations previously. These may or may not be counted as tokens of improvement in accordance with the view we take of life, its obligations and opportunities; but it is an unavoidable consequence of the change of mental and physical type that the race is growing more *sensitive*. It follows that even if there has been an actual abatement of some of those "nuisances" which affect us personally—and of street cries and noises prominently among the number—we do not derive any appreciable advantage from the improvement, because we are becoming, or have become, increasingly irritable. We have a right to ask that society should concede something to our weakness, and put down with a strong hand the needless noises that distress us. It is too bad that men who work with their brains, and are compelled by their special occupations to cultivate their sensory powers to a high pitch of delicacy, should be pestered and made miserable by the yells and screeches of costermongers, or be driven almost to frenzy by the hideous cacophony of the barrel organ. From early morning until late at night the ears of the dweller in London, whether he be busy or seeking rest, sick or sound, placid or perplexed, are remorselessly assailed by cries and noises which make attention to business a ceaseless strain, and life itself barely endurable. If anyone thinks we overstate the case, let him visit a few sick chambers and hear what the "nervous" and the suffering have to say on the subject. If the police would devote a little of their superfluous energy to the removal of this nuisance it would soon begin to abate.

PRESIDENT GARFIELD.

SINCE his last relapse, President Garfield has made favourable progress towards recovery; very few particulars have appeared in the telegrams published here, but there have been intimations of absence of fever, satisfactory suppuration with a free outlet for the pus, and gradual regaining of strength. We repeat, however, it is a case in which a guarded prognosis is essential even up to the end, until the wound has thoroughly healed. For the present the chief interest centres in the position of the bullet, and the efforts made to localise it by Professor Bell's induction balance. This is another application of electricity to medicine: proximity of a metal affects the equilibrium of the electric current and the effect is rendered audible. It is stated that with this instrument the bullet has been localised in the abdominal wall on the right side about five inches below the umbilicus; it is believed to be quite accessible to operation. It is no doubt an exaggeration to speak of this balance superseding the probe; but if it shall be found to have really localised the bullet in this case, it will have shown itself to be a very valuable instrument in certain cases. It is, however, to be remembered that, unless the bullet causes local disturbance, it would not be in accordance with modern surgical practice to attempt its removal from its present situation.

LUNATIC ASYLUMS IN IRELAND.

THE Thirtieth Report on the District, Criminal, and Private Lunatic Asylums in Ireland, recently issued from the Parliamentary press, contains much of interest. It records recoveries to the extent of 52 per cent. on past admissions, and to 11½ per cent. on the ordinary number of patients under daily treatment, "in both," the Commissioners (Dr. Nugent and Dr. Hatchett) say, "the result being alike satisfactory." No fatality occurred among the patients from personal assaults, although numerous individuals were committed on magisterial warrants as dangerously insane; the mortality in the district asylums for a series of years has been below the general average in like establishments; the recorded escapes during the twelve months (all males) were limited to six; and no legal proceedings had to be taken against any of the attendants for cruelty, violence, or other criminal acts. For these and other considerations the Commissioners think they may claim that the working of the establishments they supervise has been successful. At the close of 1880 the number of patients in the district asylums was 8667, the admissions of acute cases (first attack) during the year having been 1925. In the workhouses, on Jan. 1st, 1881, 3573 persons

more or less mentally affected were confined. "In the above total," say the Commissioners, "we apprehend that the great majority of our demented poor is included, for inasmuch as wandering lunatics or destitute imbeciles and epileptics are directly removable to poorhouses by the relieving officers of unions in which they may be discovered, and also in certain instances by the constabulary, it is but reasonable to infer that during the protracted severity of the weather in past seasons, and the destitution so prevalent throughout the country, most of the unhappy individuals referred to found their way into these institutions." With reference to a proposed assimilation of the lunacy laws of England and Ireland, the Commissioners point out the much greater provision for lunatics existing in England as compared with Ireland, as affecting seriously, and in an opposite sense, the assumed advantages which would arise from the assimilation. The Dundrum Criminal Asylum, which has accommodation for 170 patients, but had to receive more in 1880, calls for no special observations; but of the private licensed houses, which contained 630 patients, the cases of recovery and discharge during the period considered in the report "contrasted most favourably," say the Commissioners, "with what obtained in the same period in district hospitals for the insane; while the mortality—36 altogether—was 40 per cent. lower on an analogous calculation in favour of private establishments." The Commissioners add that, "with the management generally of the institutions immediately under consideration we have, on the whole, reason to be satisfied." Of the "Inebriate Bill," passed two sessions back, the Commissioners say: "We are unable to pronounce any opinion whatever as to its merits; not a single application having been made to us under its provisions by male or female for admission into hospital on the plea of a gratuitous self-imprisonment, however extensive the necessity and beneficial the contingent results."

HEALTH CERTIFICATES FOR HOTELS.

THE sanitary condition of every hotel should be certified, after close inspection and personal supervision, by the medical officer of health for the district in which it is situated. This is so obvious a precaution that it is strange it has not long since been adopted. The proprietors or managers of those colossal establishments which replace the hostelries where "mine host" reigned supreme, might well, and should in their commercial interests, take the precaution of securing this guarantee for the healthy state of their premises. They can have nothing to lose if all is really well with their houses, but much to gain by the precaution. Unfortunately, multitudes of travellers using hotels do not adequately realise the perils to which they are exposed. They think little or no harm can be done by a sojourn of one night, or even of a few days, in an establishment which is, perhaps, not all they could desire in the matter of sanitary purity and cleanliness. It needs to be impressed on the minds of those who reason thus, that the act of infection by disease, or of blood-poisoning, is probably instantaneous. A person inhales a whiff of sewer-gas, or takes a draught of water contaminated by sewage, and he is as effectually poisoned as though he had been exposed to either of the same mischievous agencies through a lengthened period. Indeed, it is, commonly, the casual visitor who is thus affected rather than the permanent resident or long sojourner, who may in some way become insusceptible or inured to the evil. The dangers to which travellers are exposed in hotels during "flying visits," both here and on the Continent, are very great. The precautionary official inspection and certification to which we have alluded probably constitute the only remedy, and it is one that lies well within reach. Perhaps it is too simple to be tried extensively. It is, however, satisfactory to learn from a letter which appears in another column, that there are districts where our old suggestion has found favour and been adopted with good results.

MR. MAC CORMAC ON MODERN SURGERY.

AT a recent meeting of the South-western Branch of the British Medical Association, held at Redruth, under the presidency of Dr. Robert S. Hudson, Mr. Mac Cormac delivered an address on some of the recent advances in practical surgery. He took occasion to laud the antiseptic treatment, but implied that with it he could not do more than his audience could with the help of their pure sea-air. He urged a wider application of the operation of trephining and elevation of bone in cases of head injury, even when there is only simple fracture of the skull. As illustrations of the value of Listerism, he cited two excellent cases of his own of extensive compound comminuted depressed fracture of the skull—one in connexion with severe brain injury—where recovery without any symptoms of inflammation ensued. In like manner he illustrated the practice of nerve suture by a case in which, six years after complete division of the ulnar nerve with the usual paralytic symptoms, he stitched together the divided ends of the nerve, with the result of a return of imperfect sensation *next day*, and perfect recovery in nine weeks. The recovery after such a lapse of time, and the speedy restoration of sensation, are remarkable facts, though in harmony with a few other striking experiences. Finally, Mr. Mac Cormac spoke of the radical cure of hernia, and advocated in suitable cases antiseptic ligature of the neck of the sac and removal of the part beyond. Excellent as are the results sometimes obtained in this manner, something more is required to ensure success in many cases, for the original process of stripping off a new sac from the lining of the abdominal parietes may need repetition; a due narrowing of the "rings" and constriction of the canal, where it can be obtained at the same time, are the only means of dealing effectually with the cause of the malady in a large number of cases.

BRAIN DEVELOPMENT AND MORAL CHARACTER.

IT is not surprising to find the unlearned in things medical unable to understand that brain development, which of course is generally a matter of heredity, determines character. Such however is, and must needs be, the fact. Whether the mind is something outside matter which acts through or by the brain, as a musician may use a musical instrument, or whether, as some think, what we call mind is simply brain function, it should be manifest on consideration that upon the quality and conformation of a man's brain must depend his mental capacity; and, consequently, also his characteristics, both intellectual and moral. We are not disposed to urge specialties of development as excuses for conduct, because, given an average degree of intelligence and fairly strong will-power, the individual is clearly responsible for his actions; but it must not be forgotten that his instincts of right or wrong, and the faculty of judgment with which he distinguishes between good and evil, will be acute or dull in proportion as his brain is developed. The mind is in a large sense the character of a man, and as directly dependent on the physical growth of his brain as the speed of a racehorse is dependent on its muscular development. This is not sufficiently recognised, and because it is not we every now and again find silly remarks in print such as the following. "The convolutions of the brain may have something to do with the difference between mediocrity and genius, but at present they are not recognised in the law courts, and it is difficult to see how they can be;" with such weak and wide moral

reflections as that "it would be scarcely satisfactory to a pickpocket to have his brains (*sic*) examined, in order to prove to those he left behind that he really could not help being a thief!" And yet the facts are sufficiently plain and simple, so plain and simple that anyone should be able to understand them.

THE "WOOD" MUSEUM, NEW YORK.

WE have been favoured with a catalogue of the noble museum of Bellevue Hospital, New York city, which originated with the collection of specimens from the private and hospital practice of Dr. James R. Wood. The catalogue is a convenient and neat volume of 256 pages. The specimens in pathology and comparative anatomy, including casts and moulds, number 2224. In 1867 Dr. Wood presented his specimens, which he had been twenty years in collecting, to the Board of Commissioners of Public Charities of the city and county of New York. In the year 1856 he had expressed an intention to this effect to a large number of medical men and students assembled at Bellevue. At this meeting he also intimated his intention to offer prizes to students of all the colleges in New York county for anatomical and pathological specimens. By such personal efforts and example he has stimulated interest in the museum, until it has now become probably the best in New York. The catalogue is well prepared, and the specimens are clearly indicated and classified. There is a want, however, of an alphabetical index. As it stands it implies no small amount of labour, but it would be greatly increased in value by such an index as we have mentioned. It is not a little remarkable that this museum, like our own Hunterian, owes its origin to a distinguished surgeon whose work is known all over the world, including especially some of the most beautiful and successful instances of operation for the reproduction of bone.

GLYCOGEN.

A SERIES of observations on the physiological and chemical relations of glycogen have been lately published by Kulz. Relatively large quantities of glycogen were long ago found by Voit in the liver and muscles of hibernating marmots which had taken no food for four months, and this has been regarded as a proof that glycogen may be formed from albumen or fat. Kulz, however, doubts whether this is entirely conclusive. Glycogen, he finds, is often absent under these circumstances, and when it is present it is in extremely small quantities, and may be merely the remains of the large stock which well-nourished animals store up during the autumn, a supposition which is quite conceivable, because the consumption during the winter is enormously reduced. The maltose which results from the action of saliva upon glycogen corresponds with that of maltose from starch, and the degree of rotation of polarised light is also the same. Watery extract of pancreas forms from glycogen achroodextrin and maltose, just as from starch. By the digestion of large quantities of glycogen or starch with saliva, a trace of grape sugar was obtained. The specific rotatory power of glycogen was found, by fourteen observations, to be 211°, and Kulz recommends that the polariscope should be used as a means of estimating glycogen, just as for grape sugar. He gives a series of double estimations by the polariscope and by weighing, which show a sufficient correspondence. The solution which is used for the polariscope should not be stronger than 6 per cent. In another series of investigations Kulz has confirmed the operations of Eckhard regarding the production of glycosuria by the stimulation of the central end of the divided vagus, and also its production by the administration of phosphoric and lactic acids, but he found also that the urine contained albumen, casts, and degenerated epithelium. Since the strong solution of these acids causes considerable gastric irritation, Kulz sought to ascertain whether the effect was to be ascribed to the irritation of the gastric termination of the vagus, and therefore gave a strong solution of common salt, which caused much irritation of the stomach, but no glycosuria. He found with Schiff that sugar appears in the urine after section of the sciatic nerve, and, further, that after the sugar had disappeared from the urine it can be produced by faradisation of the central extremity, just as by faradisation of the central extremity of the vagus.

ARMY MEDICAL SCHOOL.

THE forty-second session of the Army Medical School at Netley was brought to a close on the 1st inst. The Earl of Morley, Parliamentary Under-Secretary of State at the War Office, delivered the prizes to the successful probationers. In the interesting address which he delivered on the occasion Lord Morley particularly mentioned the excellent and successful manner in which the duties of the Army Medical Department had been discharged in the recent campaigns in Afghanistan and South Africa, and the great satisfaction that had been given to the War Department and the Government by the zeal and self-sacrificing devotion of the medical officers engaged in them. The assembly was also addressed in a spirited speech by Dr. Yandell, Professor of Surgery in Louisville, Kentucky, who had held for three years the appointment of Medical Director of the Army of the West under the Confederate Government during the Civil War in America. Lord Morley returned to London by an early train, after taking luncheon at the officers' mess. The lists of successful candidates are given in another column.

THE EDINBURGH CLUB AND THE INTERNATIONAL CONGRESS.

THE pleasure and hospitality of the International Congress have been very contagious, and it will not surprise our readers to learn that the August meeting of the Edinburgh Club, held always on the Capping day, had this week quite an international character. The numbers at the dinner greatly exceeded the average. Doubtless this was partly due to the esteem and affection entertained for Professor Gairdner, one of the University's most respected graduates. But a further explanation was the coincidence of the meeting and that of the International Congress. Many members of the Congress were the guests either of the Club or of its members, including Dr. Billings (Washington), Dr. Dunlop (Ohio), Dr. Isham (Chicago), Mr. Sampson Gamgee (Birmingham), Professor Turner (Edinburgh), Professor Haller (Prague), Dr. S. W. Gross, Dr. Austin Flint, and Dr. E. Lancereaux (Paris). The proceedings were of a most pleasant character, and guests and hosts seemed delighted.

MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE Thirty-sixth Annual General Meeting of this Association was held on Tuesday, August 2nd, at the University College, Gower-street, under the presidency of Dr. Hack Tuke. At the morning sitting, the proceedings included a vote of thanks to Mr. G. W. Mould, the retiring President, and the resignation by Dr. Clouston of his post as an editor of the *Journal of Mental Science*. At the afternoon meeting the President read an address, in which he reviewed the lunacy legislation and treatment during the past forty years At its conclusion the Earl of Shaftesbury, who was present, moved a vote of thanks to Dr. Hack Tuke, adding from his own experience several detailed particulars in corroboration of the statements contained in the address. Dr. Bucknill

seconded the vote, and it was carried with acclamation. The members of the Association dined together in the evening at the Freemasons' Tavern, where they were joined by several distinguished guests.

MR. JOHN MARSHALL, F.R.S.

MANY will feel regret that Mr. John Marshall, F.R.S., Vice-President of the Royal College of Surgeons and Chairman of the Court of Examiners, has expressed his intention of resigning his seat as a member of the Court of Examiners, to which he was elected in 1873. A press of other duties is, we believe, the reason of his taking this step. The vacancy thus caused will be declared at the next meeting of the Council.

THE Medical Acts Commission met at 2, Victoria-street, Westminster, on 29th and 30th ultimo and 1st instant. Mr. Charles Macnamara, Dr. F. E. Pocock, Dr. G. Y. Heath, Mr. Henry Morris, Professor Gairdner, Dr. Billings (U.S.A.), and Mr. Thos. Cooke gave evidence. Present: The Earl of Camperdown (Chairman), the Bishop of Peterborough, the Right Hon. W. H. F. Cogan, the Master of the Rolls, Mr. Simon, C.B., Professor Huxley, Professor Turner, Mr. Bryce, M.P., and Mr. John White (Secretary). The Commission has adjourned for the recess.

ALL the lecturers at the Glasgow Royal Infirmary School of Medicine have been re-elected for another period of office, with the exception of Dr. A. Wood Smith, who resigned. For the lectureship which became vacant in this way, that of Practice of Medicine, there were two candidates, Dr. J. Wallace Anderson and Dr. D. C. Black; the election of the former gentleman is, for many reasons, generally regarded with feelings of great satisfaction.

AT the graduation ceremonial at Edinburgh University on Monday, 35 gentlemen received the degree of M.D., and 127 the degrees of M.B. and C.M. The annual address to the graduates was given by Professor Annandale, who made some pertinent remarks on the subject of quackery, describing some of its forms, and warning his hearers against being deceived by its various disguises.

WE announce with pleasure that it has been decided to open the Museum of the Royal College of Surgeons on Sunday next, from two o'clock until six, and that Professor Flower has kindly consented to be present to explain the contents, especially to the many foreign visitors who, it is known, will attend.

ON Monday next Mr. Eric Erichsen and the Committee of the International Medical and Sanitary Exhibition will be present at the Exhibition during the afternoon to receive the members of the International Medical Congress.

WE have received from Mr. G. Jerrard, of Regent-street, copies of two cabinet portraits of Sir James Paget. They were taken only a few days ago, and are both striking and excellent likenesses.

DR. SWAN, of Dublin, was last week thrown from his horse, and received a fracture of the left humerus and some minor injuries. He is, however, progressing favourably.

SIXTEEN deaths are reported to have resulted in Baltimore from the use of toy pistols. The fatal result was in most cases due to tetanus.

THE *Melbourne Argus* reports the death, by drowning, at Wangaratta, of Mr. Angus Munro, L.R.C.P. Ed., formerly resident surgeon at the Melbourne Hospital.

EXPERIMENTAL FACTS,

SHOWING THAT THE ADMITTED VIEWS RELATING TO PARALYSIS OF CEREBRAL ORIGIN AND TO THE PHYSIOLOGY OF THE SO-CALLED MOTOR TRACT IN THE BRAIN MUST BE REJECTED.

BY C. E. BROWN-SÉQUARD, M.D., F.R.S., &c.,
PROFESSOR OF MEDICINE AT THE COLLEGE OF FRANCE.

I HAVE within the last three years found a number of facts completely at variance with the following universally received views: 1st, That each half of the brain is alone the seat of centres for the voluntary movements of the limbs on the opposite side; 2nd, that the conductors used for voluntary movements coming from the brain descend along the crura cerebri and decussate either in the pons Varolii (this is the view of most physiologists), or at the lower part of the medulla oblongata (this is the view of most physicians); 3rd, that paralysis is the direct effect of a lesion in the parts of the brain supposed to belong to the voluntary motor apparatus. The experimental facts I will now briefly mention will show the necessity of giving up those views.

1. *Paralytic effects of transverse sections of a lateral half of the brain.* — Notwithstanding the great difficulty due to rigidity of limbs and of the neck and trunk, to rotatory movements, and to several other causes, after a section of a lateral half of the base of the brain (and especially of the pons Varolii), I have been able to ascertain that such a lesion rarely produces what it ought to produce according to the received views. The researches of Magendie, of Vulpian, of Schiff, and of Lussana and Lemoigne have shown that a transverse section of one of the anterior pyramids does not produce a paralysis of the limbs on the opposite side. Some of those physiologists and myself have gone further, and shown that a section of a whole lateral half of the medulla oblongata, in dogs as well as in rabbits, will produce paralysis almost exclusively on the side of the lesion. Besides, I have ascertained over and over again that a transverse section of parts of the medulla not considered as motor will often produce paralysis of the limbs on the same side. These facts positively demonstrate—(1st) that the anterior pyramids are not the only channels of transmission of the orders of the will to muscles; (2nd) that parts not considered as motor can produce a paralysis; (3rd) that if the theory is correct according to which the voluntary motor conductors decussate in the base of the brain, their decussation must take place above the medulla oblongata. This last conclusion, together with the results of certain experiments on the crura cerebri, have led to the view now admitted by most physiologists, that the voluntary motor conductors decussate in the pons Varolii. As will be seen, decisive facts exist against the correctness of that view.

I have found that a complete transverse section of a lateral half of the pons Varolii almost always produces paralysis of the limbs on the corresponding side instead of the cross paralysis that should appear according to the supposition that decussation takes place in that nervous centre. This crossing of motor conductors is considered as occurring in the whole extent of the pons. If so, it is clear that a section separating the two upper thirds of the right lateral half of that nervous centre from its lower third ought to divide conductors belonging to the two sides of the body, two thirds coming from the left half of the brain and one from the right half. There ought to be, therefore, a considerable paralysis of the right limbs and a less marked but quite evident paralysis also of the left limbs. It is clear, besides, that after a section of the right half of the pons made so as to leave one-third above and two-thirds below it, there ought to be also a paralysis on the two sides, but in this case the loss of movement should be much greater in the left than in the right limbs. Such are not the results of the experiments. On the contrary, in almost all cases paralysis clearly exists only in the limbs of one side. In rabbits, adult or young, it is almost always on the corresponding side that it appears, and so it is in very young cats and dogs. In adult guinea-pigs, cats, and dogs the result not rarely is just the reverse—i.e., paralysis appears in the limbs on the opposite side. But in either case almost invariably it is hemiplegia which takes place, and not an incomplete paralysis of the four limbs.

Another very important fact against the supposition that

all or almost all the voluntary motor conductors decussate in the pons Varolii is given by experiments consisting in the division of a lateral half of that organ, close by the crus cerebri—i.e., at its upper extremity. A division there should always produce cross paralysis. Such is not the case, however, as very frequently in the four species of animals I have named, and especially in very young ones, I have found paralysis appearing in the corresponding side. Even a transverse section of one of the crura cerebri will sometimes produce hemiplegia on the injured side.

The place in the base of the brain above which a transverse section will give rise to cross hemiplegia, and below which it will produce direct hemiplegia, varies extremely, not only according to the species of animals, but also to their age. Great differences also exist in animals of the same species, of the same age, and in every respect as similar as possible one to the other. As the structural anatomy of the medulla oblongata, the pons Varolii, and the crura cerebri (at least as regards decussation of fibres) is essentially the same in the four species of animals I have experimented upon, it is clear that we cannot consider hemiplegia in the above experiments as being the result of a section of voluntary motor conductors.

2. *Action of the pretended psycho-motor centres, after a transverse section of a lateral half of the base of the brain.*—It is known that I have found that the supposed motor centres generally gain, instead of losing, power on the side of the transverse section of a lateral half of the medulla oblongata. This fact, of course, shows that the fibres by which the excitation of the motor centres is transmitted to muscles do not, as has been supposed, reach the spinal cord, as parts of the anterior pyramid. I have also found that a transverse section of the lateral half of any part of the base of the brain above the medulla is almost always followed by an increase of the power of the motor centres on the corresponding side. We are not, therefore, to look upon the decussating fibres of the pons Varolii as containing all the bonds of union between the motor centres of one side and the muscles of the other side of the body. Other facts which I already partly discovered two years ago, but which I have studied with great care recently in dogs and in monkeys (see *Gazette Médicale de Paris*, June 25th, 1881, p. 377), have shown that the corpus callosum is a place of passage of many of the fibres, through which an excitation of the motor centres of one side is transmitted to the muscles of the limbs on the opposite side. But I have ascertained also that after a longitudinal section of the corpus callosum each of the motor centres continues to possess the power of acting on the muscles of the limbs of the opposite side. There are, therefore, two channels, one through the corpus callosum, one through the crura cerebri, and other parts of the base of the brain, by which the motor centres transmit an excitation to muscles.

3. *Singular motor effects of excitation of various parts of the base of the brain.*—I have found that galvanisation, and also mechanical irritation of most parts of the base of the brain on one side, will produce movements of limbs on the same side eight or nine times out of ten. This very remarkable effect of irritation is found whether the part irritated is considered as motor or not. To specify, I will say that it takes place when the anterior pyramid, or the internal and anterior parts of the pons Varolii or of the crura cerebri are galvanised. I have recently made many and various experiments on that point, and have obtained, among other results, the following. If a transverse section is made, for instance, in the lateral half of the *right* side of the medulla oblongata or of the pons Varolii, and if the lower surface of the section is galvanised, it is found that, in most cases, there are movements of the *right* limbs. If two sections are made, and if the intermediate part is taken away so as to have three surfaces, a transverse inferior and a transverse upper one on the *right* side, and also a longitudinal one (belonging to the *left* side) it is found that galvanisation of the two transverse surfaces, *the upper as well as the lower one*, almost always produces movements of the limbs on the same side—i.e., the *right* ones. Galvanisation of the longitudinal surface, which belongs to the *left* side, produces movement almost always in the *left* limbs. So that the side irritated is generally the side where movements are produced; and this is the case whether the irritation is made on the upper or the lower surface of transverse sections. It is clear that in some, at least, of those cases the irritation must act by a reflex action, the starting-point being the place irritated, and the propagation to a reflex centre being through the opposite side of the brain and spinal cord. This is particularly what occurs when the upper surface is irritated; and it is what occurs also when the decussating fibres of the base of the brain, especially the anterior pyramids, are galvanised.

I will not discuss the questions that arise naturally from the statement of such facts, contenting myself at present with the remark that they are in absolute opposition to the admitted views as regards the physiology of the base of the brain.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

KING'S COLLEGE HOSPITAL.

A CASE OF ARTERIO-VENOUS ANEURISM OF THE SCALP OF THIRTY YEARS' STANDING; OPERATION; CURE; REMARKS.

(Under the care of Mr. JOHN WOOD.)

THOUGH the subjoined case is practically cured, it still remains under observation in the hospital.

A. B——, aged thirty-seven years, a painter, was admitted to the Albert ward on April 29th, 1881. The family history was excellent. With the exception of his present ailment he had never been ill in his life. He had had a pulsating tumour in the right parietal region since the age of seven; he was sure he was not born with it, and thought that it arose from a knock or blow. This increased gradually, extending towards the back of his neck. Six years before admission he noticed his eyesight on the left side failing; he wore glasses, and was able to read for some time quite well. The glasses did not, however, relieve the continual pain he had on the right side of his head. Six months before admission he noticed his left eyeball began to protrude, and that a large "vein" was forming in his left supra-orbital region. Immediately before the exophthalmos appeared he had a sudden pain at the back of the orbit, and his conjunctivæ became intensely injected. The tumour meanwhile was increasing rapidly, and small papules appeared on it, which if he picked them bled profusely; once, he thinks, he lost a pint (!) of blood.

On admission there was a large smooth swelling of the size of a hen's egg over the right parietal region just above the ear, pulsating strongly and with a marked bruit. There was a tortuous swelling (also strongly pulsating), about an inch in diameter, running forward to the root of the nose and into the corner of the left orbit. Extending from the tumour to the right occipital region was a loose pulpy nævoid condition of the scalp, where pulsation could be felt in various places. The right occipital, temporal, and supra-orbital arteries were much enlarged and firmly pulsating. The left eyeball was pushed forward, the pupil dilated; conjunctivæ congested. There were also dimness of sight and constant noises in the ears.

May 7th.—The head being shaved, ether administered, and the carbolic spray in full action, stout steel pins, with lance-shaped heads (not sharp at the sides), with the points curved so as to be at right angles to the shaft, were passed through the pericranial aponeurosis, under the right supra-orbital, temporal, and occipital arteries and veins. A thick pad of india-rubber was placed over the pins, and stout harelip silk twisted round the pins upon it, so as to occlude the vessels. This, however, diminished, but did not entirely stop the pulsation. The left occipital and temporal vessels were then occluded, and four needles were passed under the aneurismal tumour itself, and in its close neighbourhood. Pulsation then completely ceased. The whole head was then dressed with web and dry carbolic gauze and bandage. An hour after the operation the patient had intense neuralgic pain in line of occipital nerve, probably owing to that structure being included in the ligature.

12th.—Dressed antiseptically. Exophthalmos gone com-

pletely; no pulsation in tumour. Temperature normal. Dressed again on the 17th and 21st.

28th.—The pins above the orbit and right ear were loose. They were removed and reinserted, one under the anterior branch of the right and the other under the anterior branch of the left temporal.

31st.—The urine became slightly carbolised, but no constitutional symptoms resulted. The pins last inserted had caused considerable œdema of the eyelids; they were accordingly removed.

June 7th.—Dressed. Pins removed from left occipital and parietal and right occipital vessels.

14th.—Pins removed from left temporal vessels.

18th.—Remaining pins removed; no return of pulsation. One pin beneath the tumour itself had caused some sloughing of the tumour. This separated on the 28th without bleeding or suppuration.

July 21st.—The antiseptic dressing was left off, and an ordinary capitelline bandage applied.

Remarks by Mr. WOOD.—Cases very similar to the foregoing are recorded in the works of Robert Liston and Sir W. Fergusson. Liston's case was treated by ligature, first of the external and then of the common carotids, on both sides of the neck. The result was the death of the patient from brain softening, the disease not being cured. In the case, occurring in a young woman, described and figured by Sir W. Fergusson, the common carotid artery on the side of the tumour had been previously tied by Mr. Stocks without effect upon the nævus. Fergusson applied stout pins under the enlarged vessels in various parts. Secondary hæmorrhage occurred several times as the pins ulcerated through, placing the patient's life in great jeopardy, and much suppuration and inflammation resulted from the various operations; but a cure was ultimately effected. The principle of dealing locally with these vascular tumours was clearly the true one. Ligature of the carotids was so soon followed by an increase in the free anastomotic collateral circulation through the circle of Willis and elsewhere, so that the blood flowed nearly as freely through the tumour after as before the operation. The two great things to be looked to were to shut out the circulating blood at one stroke, and to prevent subsequent suppurative action and destructive ulceration or sloughing. The latter indication has, in this case, been completely effected by the strict employment of Lister's antiseptic dressing, combined with the application of the pins in such a manner and situation that there was no wounding of the vessels, and no bleeding whatsoever, neither at the time of the operation nor subsequently. There was no sloughing of the scalp, except in the thin skin just over the tumour, where the slough did good by destroying the most diseased structures. The pins were thick ones, and were passed first clean down to the bone, then pushed under the pericranial aponeurosis, and through the scalp again, clear beyond the vessels; all the prinicipal vessels of the scalp were closed at one operation, but other pins were afterwards passed in places where pulsation reappeared. The thick pieces of india-rubber served to tighten up the strain as the pins cut through the vessels, destroying only the tissues under immediate linear pressure. There was no bleeding, no inflammation, no suppuration, very little sloughing, and no surgical fever whatever throughout the treatment, which lasted ten weeks.

Reviews and Notices of Books.

John Hunter and his Pupils. By S. D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D. Cantab., Professor of Surgery in the Jefferson Medical College, President of the Philadelphia Academy of Surgery. Philadelphia: Presley Blakiston. 1881.

The Hunterian Oration. Delivered at the Royal College of Surgeons of England on the 14th of February, 1881. By LUTHER HOLDEN, Ex-President of the Royal College of Surgeons of England, &c. London: Churchill. 1881.

"*John Hunter.*" By F. H. BUTLER, in *Encyclopædia Britannica*, Vol. XII., p. 385 *et seq.*, Edinburgh: Adam and Charles Black. 1881.

THE life and labours of John Hunter are so full of incident and suggestion, that they can never cease to be objects for study and reflection to all thoughtful and intelligent minds. But notwithstanding all that has been written and said, the final word has not yet been spoken. The recent works named at the head of this notice furnish material for a fuller insight into Hunter's life and character. Each author has treated the subject in a different manner, and the combined effect is aidful to a correct appreciation of Hunter's labours. Professor Gross has written a delightful history of Hunter and his pupils, and Mr. Holden has, by instituting some researches into Hunter's early years, done a sensible and useful service in vindicating Hunter's youth from the charges of indolence, waywardness, and dissipation; but as a critical examination of Hunter's mind and method we prefer Mr. Butler's article in the *Encyclopædia Britannica*.

Probably not even yet has Hunter had his proper place assigned to him in the temple of medical and biological science. His diligence, his industry, his zeal, his enthusiasm, his intelligence, and his sagacity, have each and all excited in turn envy, admiration, and despair; while the method of his work has, at best, been imperfectly understood and inadequately appreciated. Ottley, in his account of the life of Hunter, prefixed to Palmer's edition of the works, states that Hunter in his researches strictly followed "the inductive method laid down by the great father of modern philosophy" (that is, by Francis Bacon), and in this most subsequent critics have acquiesced. But this opinion, we venture to assert, is not only erroneous in itself, but has been the obstacle to a proper estimation of Hunter's character. The doctrines of Francis Bacon have been too long and too servilely accepted. In most minds an absurdly exaggerated notion of the value of mere observation has been engendered, and Hunter has been more often praised for the facts he collected than for the uses to which he put them. Had Hunter really followed "in the strictest manner," as Ottley affirms, the Baconian method, he might have been the King of Curiosos, but he would not have become the Father of Scientific Surgery. The method he pursued was not what Professor Stanley Jevons has called the "scientific book-keeping" of Francis Bacon, but was identical with that indicated by Roger Bacon and Leonardo da Vinci and Paracelsus, and subsequently followed by Copernicus, Galileo, Kepler, Gilbert, Harvey, and Jenner, and with that which enabled Newton to crown all physical science by his grand discovery of gravitation. Francis Bacon, indeed, inculcated the notion that in order to advance science we must first accumulate facts, and then draw from them, by a process of digestion, successive laws of higher and higher generality, whereas Newton showed that observation and hypothesis must both alike be submitted to the test of experimental verification. Hunter, though unlearned in the schools, did not fail to perceive the important distinction between these two modes of procedure. "In pursuing any subject," he says in his Observations on Bees, "most things come to light as it were by accident, that is, many things arise out of investigation that were not at first conceived, and even misfortunes in experiments have brought things to our knowledge that were not and probably could not have been perceived or conceived; on the other hand, I have often devised experiments by the fireside, or in my carriage, and have also conceived the result; but when I tried the experiment the result was different, or I found that the experiment could not be attended with all the circumstances that were suggested." Had Hunter been critically acquainted with the various systems of philosophy he could not have exposed more effectually the imperfections of the (Baconian) method, which he is commonly believed to have adopted. The truth is that Hunter's genius, like all true genius, was a law unto itself, and needed no rules or formulæ for its direction and guidance. Great as Hunter was as an anatomist and physiologist, and even as a surgeon, he is greatest as a philosopher. He had a *passion* for knowledge, and that, Plato tells us in the "Republic," is the characteristic of the philosophic dis-

position. He was ever searching for the principles that underlie all phenomena. To think and to work afforded him positive pleasure. His was not a mere passive observation of facts and presentments, but an active, critical, experimental investigation of them. In this way he was led to conceive and perfect his operation for the cure of aneurism, and by this way he raised surgery from a mechanical art to the rank of a science. "The principles of our art [surgery] are not less necessary to be understood," he says, "than the principles of other sciences; unless, indeed, the surgeon should wish to resemble the Chinese philosopher whose knowledge consisted only in facts. In that case the science must ever remain unimproved until fresh facts arise. In Europe philosophers reason from principles, and thus account for facts before they arise. Too much attention cannot be paid to facts; yet too many facts crowd the memory without advantage, any further than that they lead us to establish principles."

In these words we believe is contained for us the chief lesson of Hunter's life. Misled, chiefly by the teachings of Francis Bacon, as to the value of mere observation, we have come to attach a false and vicious importance to the collection and compilation of facts, unmindful of the truth "that too many facts crowd the memory without advantage, any further than that they lead us to establish principles." We shall do well to treasure this saying of a master in our hearts, and forsake the senseless adoration of mere phenomena for the worship of true philosophy.

Public Health and Poor Law.

LOCAL GOVERNMENT DEPARTMENT.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Leeds.—Dr. Goldie, in his report for this borough for the five weeks ending the 2nd July, records for this period the low death-rate of 17·6 per 1000 of the population. The following observation has a wider application than to the town of Leeds: "I should like to make note at this stage of my report of an occurrence which will meet the eye of an observer of the habits of children during the fine dry sunny days of summer. I now speak of those children of the poorer classes of people who cannot afford the luxury of a proper play ground. Their little ones are found creeping about the flags before their doors, and almost invariably select the street gully for their play. I counted in four streets on the Bank, during my rounds on Friday last, no fewer than twenty-five children playing over the street gullies. I make mention of this with the view of cautioning parents against the extreme danger of such an act, especially during hot weather, for the gullies are then acting more than usual as sewer ventilators. In the contaminated air which is poured out of every large town sewer there are many dangerous ingredients. The more freely the sewers are opened to the external air, the more their gases and solid contents become less dangerous, but the further a person (whether healthy or delicate) is from the immediate contact with a sewer ventilator the less liable is that person to become affected." Dr. Goldie is heartily engaged in assisting Dr. Ballard in prosecuting his inquiry as to diarrhœa. In consultation with Dr. Ballard, he is wishful to induce the health committee to institute three meteorological observatories in Leeds for the purpose of studying atmospheric phenomena in connexion with diarrhœa at selected parts in the borough. All honour to Dr. Goldie for the excellent example of professional brotherhood he is so willingly setting in this important matter.

Rotherham, Yorkshire.—Dr. Hardwicke reports a death-rate in the borough in 1880 of 20·16 per 1000 living (estimated population 34,404), as compared with 17·29 in 1879. He attributes the increased mortality during the year (1) to an epidemic of scarlet fever which had continued throughout the year; (2) to an increase in the deaths from diseases of the respiratory organs; (3) to the unhealthiness of certain localities recently added to the borough. The account given of sanitary improvements effected in the borough in 1880 occupies but little space in the report, while a dismal array of recommendations regarding improvements needing to be carried out fill the last page.

Greenock.—Dr. Wallace, for the four weeks ending July 2nd, reports a mortality at the annual rate of 16·7 per 1000 living. Typhus, which was absent at the date of his former report, had reappeared in the town, though confined to a single family, in which it is probable the nature of the disease was not recognised until more than one member had become affected. Scarlet fever was on the increase.

Dublin.—During the five weeks ending July 2nd the deaths registered in the municipal area numbered 565, being in the annual ratio of 23·7 per 1000 persons. The deaths from the seven principal zymotic diseases were in the ratio of 1·96 per 1000, and from all zymotic diseases amounted to 62 deaths, contrasting very favourably with the corresponding period of 1880, when 185 deaths were recorded from the same class of diseases. As regards the disinfection of clothing, bedding, &c., Dr. Cameron, as the result of some observations recently made, suggests that in future no feather beds, hair mattresses, or straw palliasses should be disinfected in the hot-air chamber. The highly heated air, he is of opinion, does not penetrate the interior of these articles, and he recommends that the owners should provide new coverings, so that the old ones could be removed at the disinfecting chamber, and the exposed hair and feathers might then be disinfected in wire cages. The Public Health Committee have adopted these suggestions, and have ordered them to be carried into effect. During the month nearly twelve tons of food were condemned; there were six convictions for selling adulterated food, and £20 imposed as penalties.

COMBINATION OF SANITARY DISTRICTS IN DENBIGHSHIRE.

Some time ago we had occasion to direct attention to a proposed combination of sanitary districts in Denbighshire, promoted by the local inspector of the Local Government Board, Mr. Murray Browne, but objected to by the sanitary authorities concerned, not so much, perhaps, from disagreement with the principle involved in the proposition as from a belief that it had been advanced without due regard having been given to local feeling on the subject. The further discussion of the matter was postponed for twelve months, and this period having now expired its consideration was recently resumed by the sanitary authorities whose combination had been proposed. At a meeting of the Holywell Board of Guardians on the 3rd of June last, Mr. Murray Browne thought it desirable that he should explain the course he had taken in dealing with the subject, and in a long and interesting speech he showed very clearly that in view of the seriously inefficient sanitary districts he suggested for combination, and the connexion of this inefficiency with the appointment of many officers of health in the several districts, the only course open to him, if he were to do his duty, was to recommend a combination of districts for the appointment of a single efficient medical officer of health, who should give his whole time to the duties of the office. In this case it would appear obvious that the appointment of district medical officers as medical officers of health has entirely failed, and that it has been found impossible to reconcile the demands of Poor-law and private practice with the requirements of public-health practice. We learn, however, that the Local Government Board is determined to leave no doubt resting upon the actual merits of the question before it proceeds to exercise its powers in respect to combination, and that Dr. Parsons, of the medical department, has been directed to make a special inspection of the sanitary districts in Denbighshire with a view of ascertaining precisely the actual effects which have been produced upon their sanitary administration by the appointment of the district medical officers as medical officers of health.

HOP-PICKERS AND SMALL-POX.

The Local Government Board has issued a circular letter to the Clerk of the Guardians in hop-growing districts, setting forth that their attention has been called to the possibility of small-pox, now prevalent in London, being introduced into those districts through the medium of hop-pickers from infected parts of the metropolis. The circular then points out the steps which should be taken to secure the vaccination and revaccination of the population under their charge, and proceeds to suggest the advisability of the sanitary authority making some provision beforehand, if

this has not been done already, for the immediate isolation of any case of small-pox, and points out the advantage which might arise, where a number of hands are employed in a hop-garden, of setting apart a separate shed where any person falling ill could at once be placed. Copies of the well-known memoranda of the Board with regard to the steps to be taken by the guardians and sanitary authorities in the presence of epidemics of small-pox are included in the circular.

The Lower Thames Valley Main Sewerage Board have, as we announced last week, adopted the scheme laid before them by Mr. Hawksley for draining their district by carrying out a plan of sewerage with an outlet into the Thames below the metropolitan area and the outfalls of the metropolitan main sewers. The sanction of the Local Government Board has been sought to this scheme, and Mr. Dodson, in an interview with a deputation from the Valley Board, suggested that that Board should proceed to obtain Parliamentary sanction by way of a private Bill; but the deputation, thinking that they had already sufficient experience of private Bill proceedings, shrank from the proposition in horror.

It appears from the report of Mr. Davies to the Bristol Sanitary Authority for the week ending July 20th that the report of an outbreak of small-pox at Clifton College had been exaggerated. One case only had occurred there, in the person of a youth, "a member of a family afflicted with a superstitious belief in the imaginary evil effect of vaccination." This youth contracted the infection on a visit to his home, but measures of isolation were so well carried out that the disease did not extend to any other person in the College.

It is reported that a patient, suffering from the early stages of small-pox, and in course of being conveyed in an ambulance to the Highgate Small-pox Hospital, persuaded the driver to pull up at a public-house, in order that he might have a drop of beer before he was shut up in the hospital!

Silverhill, a suburb of Hastings, appears to be in great difficulty as to its water-supply; and Hastings has hitherto turned a deaf ear to the appeal of the unfortunate inhabitants for relief from its redundant supply.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

The rate of English urban mortality showed a further increase last week. In twenty of the largest English towns 5274 births and 3673 deaths were registered. The latter exceeded by 416 the average weekly numbers during 1880. The annual rate of mortality rose last week to 25·2.

The deaths referred to the principal zymotic diseases in the twenty towns, which had increased from 441 to 834 in the four previous weeks, further rose to 1157 last week; these included 776 from diarrhœa, 104 from measles, 106 from scarlet fever, 79 from whooping-cough, 43 from small-pox, 26 from fever (principally enteric), and 23 from diphtheria.

HEALTH OF SCOTCH TOWNS.

The annual death-rate in eight of the largest Scotch towns, which had been equal to 20·4 and 18·9 in the two preceding weeks, further declined to 18·2 last week; this rate was 7·0 below the average rate in the twenty large English towns last week. The deaths referred to the principal zymotic diseases in the eight towns rose to 94. A fatal case of small-pox was recorded both in Glasgow and Perth.

HEALTH OF DUBLIN.

The rate of mortality in Dublin showed a considerable decline last week. The annual death-rate in the city, calculated upon the population enumerated in April last, which had increased in the four previous weeks from 18·7 to 24·3, fell to 17·5.

HEALTH MATTERS GENERALLY AT HOME AND ABROAD.

NOTIFICATION OF INFECTIOUS DISEASES.

A Bill has been prepared and brought into the House of Commons by Mr. Hastings, Sir Trevor Lawrence, Dr. Farquharson, and Mr. Brinton, which would make it compulsory upon a medical practitioner to give immediate information of any case coming under his care of small-pox, cholera, typhus, typhoid, scarlet, relapsing, or puerpera fever, diphtheria, measles, or erysipelas, or other acute infectious diseases, when included within the scope of this Act, by order of the Local Government Board. If no medical practitioner is attending such case then notification is to be given to the person in the charge. Forms for certificates are to be provided by the authority, and a fee of 2*s.* 6*d.* is to be paid to the medical man for his certificate of notification, "provided that not more than one fee shall become payable to the same medical practitioner for any certificate given by him in respect of any infectious disease occurring in the same building, within thirty days of the date of the said certificate." It is provided also that no fees shall be payable for the notification of infectious diseases occurring in workhouses, gaols, and public hospitals. A penalty, not exceeding £5, is imposed for neglect of notification. The Bill does not apply to Ireland.

SUMMER DIARRHŒA.

While the Local Government Board, much perturbed by the mortality caused by summer diarrhœa, and hampered by assumed difficulties surrounding the causation of the disease, thinks it requisite to direct one of its most experienced medical inspectors to prosecute an inquiry into the subject in all parts of the kingdom, Mr. Baldwin Latham steps boldly in, and settles offhand a question which the Medical Department of the Local Government Board hesitates to touch without laborious preliminary investigation. Mr. Baldwin Latham has no hesitation in saying that "there is the strongest evidence to show that this disease [summer diarrhœa] is produced by the use of water at a temperature exceeding 62 deg." It would be instructive to know what sort of notion Mr. Baldwin Latham has of what are the pathological phenomena referred to under the term "summer diarrhœa;" but it may be presumed that to him it is simply a term in a statistical return. Obviously, as regards the engineering mind, the disease must present itself in a very different aspect to that which it assumes in the medical mind; and the value of an opinion which ignores both clinical and pathological evidence, must be about as great as a medical opinion would be on an equally difficult question in engineering.

DR. CAMERON ON THE LOCAL GOVERNMENT BOARD AND EPIDEMICS.

Dr. Cameron is particularly unfortunate in dealing with the subjects of public health importance which he brings before the House. There was much to be said in support of his attack in the House of Commons on the 1st August upon the administration of the Local Government Board in respect to epidemics, and particularly in respect to the recent outbreak of small-pox in the metropolis, and much which required explanation from that Board. But Dr. Cameron has failed to understand the relation of the metropolis to the Public Health Act of 1875, was in error as to the powers exercised by the Local Government Board in the metropolis, and did not distinguish between shortcomings due to the imperfections of the law and imperfections due to shortcomings in the administration of the Board. Under these circumstances Dr. Cameron's attack glanced harmlessly aside, and we must wait until some member of the Legislature will really give time and trouble to master a very complicated question of both law and method of administration, before we can hope that this subject can be fully, properly, and with a hope of amendment brought before Parliament.

COTTIERS' AND CROFTERS' HOLDINGS.

The Bill which Lord Waveney presented to the House of Lords a few days ago to provide sanitary supervision and sufficient accommodation in the dwellings of the cottiers and cottier tenants of Ireland, and of the cottars, crofters, or subtenants of the Islands and Highlands of Scotland, although perhaps ill-timed, touches a question which lies at the root of sanitary reform in both the countries referred to, and is by no means fully solved in this country. The house is as much the unit to which sanitary administrators must address themselves in Ireland and Scotland as in England, and we are glad to notice that this subject is not likely to be suffered to pass out of the attention of the Legislature amidst the difficulties which have surrounded legislation this session.

PHARMACEUTICAL CONGRESS.

THE fifth International Pharmaceutical Congress was commenced on Monday last at the house of the Pharmaceutical Society in Bloomsbury-square. Mr. Greenish, the President of the Pharmaceutical Society of Great Britain, took the chair. In his introductory address he said:—"Though pharmacy is at the present time conducted in different countries under somewhat different conditions, so far as regards the laws which govern its practice, there are, nevertheless, many subjects in regard to which discussion by such a representative body of pharmacists as is now assembled at this congress must result in valuable suggestions for the further development of our art. During nearly half a century this lecture-theatre has seen many gatherings for various purposes, but not one possessing the same interest or importance as the congress now filling it, to the foreign members of which every British pharmacist extends the hand of fellowship and a hearty welcome." The report of the executive committee stated that 400 invitations had been sent to foreign pharmacists to attend the congress, and the invitations had been accepted in nearly every case. Professor Redwood was subsequently elected president of the conference, and took the chair vacated by Mr. Greenish.

Mr. M. CARTEIGHE read the first paper, on "An International Pharmacopœia." He recommended that an international pharmacopœia should be established; that for elaborating the scheme a commission of at most nine prominent practical pharmacists should be appointed. The Pharmaceutical Society of Great Britain should, he thought, occupy in the future the place hitherto occupied by the St. Petersburg Society.

A paper on the same subject, by Mr. T. MARTENSON, was also read. He suggested that a commission for the drawing up of an international pharmacopœia, consisting of representatives of societies in the several countries, should be appointed, and that after the final construction of the pharmacopœia the commission should cause the issue of a sufficient number of copies, possibly in the Latin language, to be sent to the several governments.

Mr. SQUIRE followed, with a paper on "The Equalisation of the strength of Officinal Pharmaceutical Preparations containing Potent Drugs." Preparations nominally the same in different countries at present varied very much in actual strength, and it was of the greatest importance that this should be corrected. He submitted tables showing the great difference at present existing in the measure and weight of medicines of a strong character in various countries.

A paper by Mr. E. Shner, of Zurich, was read by the SECRETARY, urging the necessity for an international standard of uniform legal strength for all narcotic and nervine preparations.

Mr. MADSEN, of Copenhagen, commenced the discussion. He felt that the time had now come for carrying out their views practically. He moved, "That this congress invite the pharmacopœia authorities of all countries to send a delegate to a commission meeting in a central European city for the purpose of taking steps to equalise the strength of pharceutical preparations containing potent drugs, and, if possible, of obtaining uniformity in other respects between the pharmacopœia of various countries."

Mr. MARTENSON, of St. Petersburg, seconded the resolution.

Mr. MEHO, of St. Petersburg, supported the resolution, and Dr. POEHL stated that the Russian Government were prepared to support any movement in the direction of establishing an international pharmacopœia.

Mr. PETIT was of opinion that there should be a universal pharmacopœia with reference to the use of powerful drugs. It was of the utmost importance that there should be an international understanding on the matter.

Mr. SINIMBERGHI, of Rome, gave his heartiest support to the proposition for uniformity being established in connexion with drugs. The French Government had already sanctioned a plan being drawn up.

Mr. BRUNNENGRABER hoped they were all agreed on the general question, but they could only start with small beginnings. They should first of all draw up a list of potent drugs, and a committee of the congress should be appointed to carry out the necessary work.

Mr. INCE said at present the French, the English, and the Americans had different pharmacopœias, and the first move towards adopting a universal pharmacopœia had been taken by the Argentine Republic, who had adopted the French standard.

At the meeting on Tuesday, Professor Redwood in the chair,

Mr. M. CARTEIGHE (London) read a paper on "Pharmacopœia Revision." He said it would seem a natural arrangement that while the representatives of medicine decide what drugs and remedies are to be inserted in such a volume, the formulæ of the preparations best adapted for their administration would be most conveniently determined by practical pharmacists. The presence of the pharmacist on the committee of revision, and the representation of the leading colleges of pharmacy conjointly with those of medicine on the National Convention which appoints this committee, had stimulated the progress of pharmacy in the United States to a marvellous extent. Its pharmacy was more advanced, and it possessed more workers in the purely pharmaceutical line of research than most other countries. This result was mainly due to the cordial recognition by the colleges of medicine of the value of public pharmaceutical institutions, and the services of their individual members in framing their national pharmacopœia. The first British Pharmacopœia appeared in 1864, and was issued under the authority of the Medical Council, a body created by the Medical Act of 1858. In 1867 appeared a new edition, which, with the "Additions" published in 1874, forms the existing British Pharmacopœia. Modelled on the plan of the United States Pharmacopœia, this was a decided advance on all previous works of the kind published in this country, and the improvement was to be attributed to the large pharmaceutical experience and knowledge of the editor.

A communication from Mr. BRUNNENGRABER, on the same subject, was read. He said that for the revision of a national pharmacopœia it was necessary that there should be a permanent commission, comprising among its members the largest possible number of pharmacists. It should be the duty of this commission, during the periods between the publication of the successive editions, to investigate such new drugs as made their appearance in the drug market, in order to determine the characteristics of their genuineness, and at the same time to submit the formulæ given in the pharmacopœia to a continuous examination.

The members of the Congress dined in the evening at Willis's Rooms, Mr. Greenish taking the chair.

The Chairman, in proposing the toast of the evening, "The International Pharmaceutical Congress," said he had the honour to propose a toast which had never before been proposed in that room. The subject had been before them of an International Pharmacopœia, and they were evidently agreed that the strength of the prescriptions should be the same in all countries. On the Continent the regulations at present were far better than those existing in England.

The third sitting of the Congress was held on Wednesday, in the Lecture Theatre of the Society, Bloomsbury-square, Professor Redwood presiding. The discussion on the papers which had been read was proceeded with, and a great variety of opinions were expressed. The Chairman having ruled that it was time that discussion should come to an end, the following resolutions were submitted to and adopted by the Congress:—

"1. The fifth International Pharmaceutical Congress, held in London, confirms the resolutions passed at previous Congresses as to the utility of a Universal Pharmacopœia, and is of opinion that it is necessary at once to appoint a Commission, consisting of two delegates from each of the countries represented at this Congress, which shall prepare in the shortest possible time a compilation in which the strength of all potent drugs and their preparation is equalised."

"2. The Executive Committee of this Congress is requested to take the necessary steps that the resolution be speedily carried out."

"3. The work when ready shall be handed over by the delegates to the respective Governments, or their Pharmacopœia committees."

"4. It is desirable that the committee establish a uniform systematic Latin nomenclature for the pharmacopœias of all countries."

"5. It is desirable that this commi ee take measures that

an official Latin translation be made of the pharmacopœias of different countries which are not now published in that language."

"6. It is desirable that the committee be put in possession of all the manuscripts, including the documents relating to the Universal Pharmacopœia of Paris, and presented at the fourth meeting of the International Congress at St. Petersburg by the Society of Pharmacy of Paris."

"7. That the Pharmaceutical Societies of the respective countries be requested to nominate those members of the Commission not appointed by this Congress and to fill up any vacancies that may arise from time to time."

The President of the Congress, Professor REDWOOD, then delivered his address. He remarked that the subjects which had occupied their attention were such as could not fail to interest them all, and the discussion of these subjects by men whose experiences differed had afforded matter from which all, he believed, might derive benefit, and none more than the pharmacists of this country. As an aid to the accomplishment of this object, they were fortunate in thus being brought into contact with their brethren from countries where pharmacy has been practised for centuries as a distinct art. Education, whether of the scholastic or elementary, scientific or technical kinds, was an essential element of success in all attempts to raise the status and influence of pharmacists in their relation to others. It was, perhaps, not too much to say that the most important subject they had had to discuss there—one strictly within their legitimate province—had been that of the equalisation of the strength and composition of potent medicines which are used under similar names in different countries, and are recognised in the pharmacopœias of those countries. As far as related to the preparation of such medicines, the production of an international pharmacopœia seemed to present no insuperable difficulty, while it would be attended with great and manifest advantage. It was an object that could hardly be completed in any other way than through an international congress, and it would also seem indirectly to advance the position and influence of pharmaceutical accuracy, and especially of this country. Looking at the high social and professional position of medical men in this country as compared with the position of pharmacists, it must be conceded that there was a gap which ought to be filled up or diminished, as they looked for a participation in the regulation of certain medical or medico-pharmaceutical affairs. The pharmacists of this country, co-operating with those of other nations where pharmacopœias were produced by the joint labours of medical men and pharmacists, would be brought into communication with those in authority both here and elsewhere, and the way would thus be prepared for their undertaking other responsible and official duties. In conclusion, he would express a hope that that Congress might not have proved unproductive of good in bringing men together face to face from so many distant countries, and affording them an opportunity for free and friendly discussion, for the interchange of opinion and sentiment, and the cultivation of good fellowship, not only in the halls of science, but at the festive board, and in social intercourse.

It was recommended that the next Congress be held in Brussels three years hence.

MEDICAL NOTES IN PARLIAMENT.

IN the House of Commons on Thursday, the 28th ult., Mr. Dillwyn's Lunacy Law Amendment Bill, which stood for recommittal, was withdrawn.—The report of the Select Committee on the Contagious Diseases Acts, with the minutes of evidence, was laid upon the table.—Sir Eardley Wilmot gave notice that early next session he will ask leave to reintroduce his Vivisection Abolition Bill.—Mr. Thomasson put down notice of opposition to the Infectious Diseases Notification Bill.—Mr. Findlater gave notice that in Committee on the Army Estimates he will move to reduce the medical vote.

The Veterinary Surgeons Bill.

Mr. T. P. O'Connor gave notice that in committee on this Bill he will move to add to Clause 4 the following proviso:—"A person designated a licentiate of the Royal College of Veterinary Surgeons shall be furnished by the council of the said College with a form of certificate bearing the arms of the said College stating that such a person is registered a 'Licentiate of the Royal College of Surgeons, to practise the Art and Science of Veterinary Medicine and Surgery,' and signed by the president, treasurer, and secretary of the Council of said College."

On Friday the first annual report of the Inspector of Habitual Drunkards' Retreats was presented, together with a copy of the Government rules for the management of such retreats.

The Siberian Plague.

Mr. Birkbeck gave notice that on Thursday he will ask the Vice-President of the Council whether his attention has been called to the report of Mr. Spear relative to the Siberian Plague, and the extreme danger of its spreading to our flocks, and also the danger of fatality to the woolsorters; whether it is a fact that upwards of 100,000 bales of Eastern wool are annually imported into England, and proved to be capable of much danger; and whether he has considered, in view of its dangerous properties, the desirability of prohibiting the sale of the sweepings from the manufacturers' sorting-rooms, and also the sale of the old bags.

On Monday, a petition in favour of the Veterinary Surgeons Bill was presented from the Central Veterinary Medical Society of Great Britain.

The Control of Epidemic Diseases.

On the motion of going into Committee of Supply, Dr. Cameron called attention to the powers possessed by the Local Government Board for the prevention and control of epidemic diseases, and to the manner in which those powers had been exercised. He said that if prompt measures had been taken, 1800 lives would have been saved in the recent small-pox epidemic, and the serious illness of 10,000 other persons avoided. Under the Public Health Act, 1876, the Board had power in case of epidemic to make provision for medical aid and accommodation; but since December last they had done absolutely nothing, and had even refused to give advice. The Metropolitan Asylums Board had repeatedly applied for advice and assistance, but without effect. There had been a failure of lymph, and in some cases it had been mixed with water in order to make it go far enough. The Board were voted £300,000 for sanitary purposes, and they ought at least to take as much interest in an epidemic among human beings as the Privy Council would in the case of an outbreak of cattle disease.—Mr. Dodson replied that the Prevention of Diseases Act, and not the Public Health Act, applied to the metropolis, and the extraordinary powers given by the former enactment applied only to plague, Asiatic cholera, or other extraordinary visitation. However, the Local Government Board had not been apathetic, and the Metropolitan Boards had readily responded to their suggestions. The District Boards, however, had done very little to provide the requisite hospital accommodation, and these Boards were not under the jurisdiction of the Local Government Board. A great difficulty in the way was the opposition of the inhabitants of otherwise suitable districts to the erection of hospitals for the treatment of epidemic diseases. He trusted that the effect of the discussion might be to stimulate the local authorities to greater exertions.—After a few observations from Mr. Warton the subject dropped.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The following gentleman was admitted a Fellow of the College on July 28th:—

Siordet, James Lewis, M.B. Lond., Mentone.

The following gentlemen were admitted Members:—

Anderson, James, M.D. Aberd., Keppel-street.
Fenwick, Bedford, M.D. Durham, West-street.
Gulliver, George, M.B. Oxford, St. Thomas's Hospital.
Hadden, Walter Baugh, M.D. Lond., Coventry-street.
Marriott, Peter William, M.D. St. And., Mentone.
Thursfield, Thomas William, M.D. Aberd., Leamington.
Tooth, Howard Henry, M.B. Camb., Bernard-street.
Uhthoff, John Caldwell, M.D. Lond., Sussex County Hospital.

The following gentlemen were admitted Licentiates:—

Barratt, Herbert James, West London Hospital.
Barton, William Edwin, Etchingham, Hawkhurst.
Bradshaw, Oswald George Dix, Warwick-street.
Butler, Thomas Edward, Sydney Villas, New Malden.
Clark, William, Wotton, Gloucester.
Clegg, Walter Thomas, Edge-lane, Liverpool.
Copley, W. H., Stanhope-street.

Corlett, W. T., M.D. Worcester, London Hospital.
Crook, John Siddon, Northfleet, Gravesend.
Hitch, Frederick, Poplar Sick Asylum, Bromley.
Inger, John William, Nottingham.
Jones, Robert Dennett, Bron'r Eryr, Conway.
Laimbeer, Frederick James, Roscommon-street, Liverpool.
Lewis, William Henry Phillips, Halsey-street.
Marsh, Frank, Infirmary, Stafford.
Neatby, Edwin Awdas, London Hospital.
Starling, Edwin Alfred, Widmerpoole, Sutton, Surrey.
Sutherland, William Ross, M.D. McGill, Belsize-square.
Sykes, Matthew Carrington, Grenville-street.
Tidswell, Herbert Henry, Chepstow-place.
Wells, Alfred Ernest, St. Thomas's Hospital.

BRITISH MEDICAL SERVICE.—The following is a list of Surgeons on probation in the Medical Department of the British Army who were successful at both the recent London and Netley Examinations. As the positions of these gentlemen are settled by the marks gained in London alone, they only are shown in this list:—

	Marks.		Marks.
* Davies, A. M. ..	2320	Younge, G. H. ..	1675
Hubbard, H. W. ..	2290	Clements, W. G. ..	1670
Fitzsimon, P. C. C.	2090	Babbie, W.	1625
Noding, T. E... ..	2065	O'Brien, R. F. ..	1620
Yourdi, J. R... ..	1902	Thiele, C. W... ..	1610
Culling, J.C... ..	1900	Nichols, F. P. ..	1580
Hackett, R. I. D...	1955	{ Cox, T.	1570
McGeagh, R. T. ..	1950	{ M'Laughlin, J. ..	1570
Trewman, G. T. ..	1910	Fowler, R.	1560
{ Johnston, H. H. ..	1900	Creagh, S. H... ..	1510
{ Wilson, E. M. ..	1900	Lambkin, F. J. ..	1500
Risk, E. J. E. ..	1895	Reade, W. L... ..	1490
Davies, J. D... ..	1880	Peard, H. J.	1475
Birrell, W. G. ..	1850	O'Grady, G. S. ..	1455
Dundon, M.	1840	Rennie, S. J... ..	1425
{ Lingard, T. R. ..	1830	Carmichael, J. ..	1405
{ Magrath, C. W. S...	1830	Farmar, E. D. ..	1390
Lane, A. V.	1780	{ Creagh, G. W. B...	1370
Beatty, J. W... ..	1740	{ Wilkinson, F. T. ..	1370
Weston, G. E. ..	1695	Semple, J.	1345

* Gained the Martin Memorial Silver Medal; also the Prize in Military Surgery, presented by Sir Joseph Fayrer, K.C.S.I.

INDIAN MEDICAL SERVICE.—The following is a list of candidates for Commissions as Surgeons in H.M. Indian Medical Service who were successful at both the recent London and Netley Examinations. As the positions of these gentlemen are determined by the addition of the marks gained at Netley to those previously gained in London, the combined numbers are shown in this list:—

	Marks.		Marks.
* Griffiths, H. T. ..	5210	Cooper, R. G. ..	3885
† Milne, A...	4710	Braganza, M. B. ..	3875
Hawkins, F. D. C.	4485	Patch, A. T. L. ..	3835
Cunningham, J. A.	4465	Maclaren, J. F. ..	3715
Nowland, A. G. E.	4456	Avetoom, S. T. ..	3705
{ Hudson, H. C. ..	4290	Stevenson, H. W...	3660
{ Baker, R. J.	4290	Ross, R.	3630
Silcock, A.	4071	Adams, C.	3483
Mullane, P.	3925	DaCosta, E. R. ..	3395
Rodgers, J. W. ..	3920	Kanga, J. K... ..	3395
Corkery, W. A. ..	3900	O'Hara, A. J. ..	2990

* Gained the Herbert Prize; also the Martin Memorial Gold Medal.
† Gained the Parkes Memorial Bronze Medal.

APOTHECARIES' HALL.—The following gentlemen passed their examination in the Science and Practice of Medicine, and received certificates to practise, on July 28th:—

Allnutt, John, Kidderminster.
Colman, Geo. Maurice Holbyn, Holland-road, Kensington.
Cook, Philip Inkerman, Brixton.
Drysdale, Alfred, Stamford-road.
Gee, Thomas Ernest, Kingsland-road.
Paine, Geo. Reuben Robins, Goring, Sussex.

The following gentlemen also on the same day passed the Primary Professional Examination:—

Bostock, John, London Hospital.
Cortis, Herbert Liddell, Guy's Hospital.
Rugg, George Lewis, King's College Hospital.

AT a meeting of the Aberdeen Town Council, held on Monday last, it was unanimously resolved to invite the British Association to hold its meeting in that city in 1883.

THE salary of Mr. R. M'Nicoll, medical officer for the St. Helens district of the Prescot Union, has been raised to £90 per annum.

A MEETING of the Council of the Hospital Sunday Fund is to be held at the Mansion House to day (Friday) at 3 o'clock.

THE "New York Medical Record" states that Dr. Alphonse Oulman, of Brooklyn, U.S.A., having refused to pay a fine of fifty dollars imposed on him for failing to report a case of small-pox, has been sent to prison.

DR. E. S. SYMES, physician to the St. George's (Hanover-square) Infirmary, has received a gratuity of ninety guineas for extra services rendered in certifying in cases of lunacy for a twelvemonth.

A BENEVOLENT citizen of Cork, Mr. Francis Wise, has intimated his intention of bestowing a sum of £27,000 for charitable purposes. The Cork South Infirmary will receive £3000, and the North Infirmary and Fever Hospital £2000 each.

ADMIRALTY.—The following appointments have been made:—Staff-Surgeon E. A. Hudson, to the *Dragon*, vice Curtis, the appointment of Peter Burgess cancelled; Staff-Surgeon J. H. Martin, to the *Lord Warden*, vice Hudson. Surgeon P. S. Warren has been placed on the retired list.

MUNIFICENT BENEFACTIONS.—By the will of Dr. Smith, who lived and practised medicine at Tickhill, North Notts, for some twenty years, the poor of Tickhill, Wadworth, Stainton, St. Michael-le-Belfuey, Helmsley Blackamoor, and Hawnby parish, are to receive, in three yearly instalments, the proceeds of investments varying in value from £850 to £250.

HEREFORD DISPENSARY.—At the annual meeting of the governors of this institution it was announced that a new building, to afford increased accommodation for patients, was nearly completed. It was agreed that a committee should be appointed with the object of framing rules for the establishment of a provident branch in connexion with the dispensary.

BEQUESTS AND DONATIONS TO MEDICAL CHARITIES. Miss Georgina Henderson, late of Montague-street, Russell-square, bequeathed 100*l.* each to the National Hospital for the Paralysed and Epileptic, and the Hospital for Women, Soho-square. St. George's Hospital, the Brompton Consumption Hospital, and Queen Charlotte's Lying-in Hospital receive each 300*l.* under the will of the late Mr. G. W. Campbell, of Ennismore-gardens, Hyde-park.

ROYAL COLLEGE OF PHYSICIANS.—The following gentlemen have been appointed Examiners at the College:—Chemistry and Chemical Physics: Drs. A. J. Bernays, W. J. Russell, C. R. A. Wright, Mr. C. W. Heaton. Materia Medica, Medical Botany, and Pharmacy: Drs. Lauder Brunton, Moxon, F. T. Roberts, E. B. Baxter. Osteology and Anatomy and Physiology: Drs. Curnow, Pye-Smith, Allchin, Mr. W. Anderson. Medical Anatomy and the Principles and Practice of Medicine: Drs. Handfield Jones, Sydney Ringer, Fincham, Edward Pollock. Midwifery and the Diseases Peculiar to Women: Drs. Gervis, Galabin, Playfair, J. B. Potter. Surgical Anatomy and the Principles and Practice of Surgery: Messrs. Thomas Bryant, G. D. Pollock, Sydney Jones, Alfred Willett.

THE annual conjoint excursion of the Northumberland and Durham, and South Durham and Cleveland Medical Societies took place on Thursday, July 28th. The latter society, under the presidency of Dr. Foss, Stockton-on-Tees, invited the former society, under the presidency of Dr. Eastwood, Dinsdale-park, Darlington, to visit several interesting places on the banks of the Tees. Carriages conveyed the members from the railway-stations to Sockburn, where they examined the ruins of an ancient church, dating back to the eighth century. The porch once contained the effigy of the knight Conyers, now removed to the neighbouring hall, of the thirteenth century, and beautifully executed. The lord of Sockburn was knighted by the then sovereign, and lands given to him, for slaying "a dragon, worm, or flying fiery serpent," which infested the neighbouring country, killing man and beast. The members were much interested as to the character of this dragon or worm; and the general opinion was that it was of the lizard species. It is so depicted at the feet of the recumbent knight. The falchion, of exquisite workmanship, is still in existence, also of the thirteenth century; and, until 1826, was presented to every newly-appointed bishop by the lord of Sockburn on his entry into the diocese. On this condition the lands were held. The party then proceeded to the Salmon Leap on the Tees, or the Fish Locks, where a few salmon were endeavouring to scale the barrier. They afterwards visited the double-moated Manor House of the ancient family of Surtees; and the restored church of Dinsdale. They then proceeded to Dinsdale-park, where a collation was provided by Dr. and Mrs. Eastwood, to which between forty and fifty gentlemen sat down. A most enjoyable day was spent.

Medical Appointments.

Intimations for this column must be sent DIRECT *to the Office of* THE LANCET *before 9 o'clock on Thursday Morning, at the latest.*

BATTERBURY, R. L., M.B.Lond., M.R.C.S., L.S.A.Lond., has been appointed Medical Officer to the Berkhampstead District and the Workhouse of the Berkhamstead Union.

BRYDEN, R. J., M.R.C.S., L.S.A.Lond., has been reappointed Physician's Assistant to the Bristol General Hospital.

CLARKE, W. J., M.R.C.S., has been appointed House-Surgeon to Queen's Hospital, Birmingham, vice J. Whitehouse, M.R.C.S., resigned.

CURTAYNE, H. M., M.R.C.S., has been appointed House-Physician to the General Lying-in Hospital, vice A. Money, M.B., M.R.C.S., resigned.

GEORGE, J. W., M.R.C.S., L.S.A.Lond., has been appointed Medical Officer for the Malvern District of the Upton-on-Severn Union, vice Wadams, resigned.

GORST, H., L.R.C.P.Lond., M.R.C.S., has been appointed Medical Officer and Public Vaccinator for the Huyton District of the Prescot Union.

KNOWLING, E. M., M.R.C.S., has been appointed Resident Clinical Assistant to the Hospital for Consumption.

LAMBERT, J., M.R.C.S., L.S.A.Lond., has been reappointed Medical Officer of Health for the Farsley Sanitary District.

MCCLUNG, J., L.K.Q.C.P.I., L.R.C.S.I., has been appointed Medical Officer for the Eastern Division of the Omagh Dispensary District.

MONCKTON, D. H., M.D.Lond., F.R.C.S., has been elected Physician to the Staffordshire General Infirmary, at Stafford, vice Dr. Day, deceased.

MULLEN, J. W., L.R.C.S.I., has been appointed Resident Medical Officer to the Wilton Hospital, Salford.

ORCHARD, A., M.R.C.S., has been appointed House-Physician to Queen's Hospital, Birmingham, vice J. Oliver, M.B.Ed., resigned.

WALSH, D., F.K.Q.C.P.I., has been appointed Medical Officer for the Tiscoffin Dispensary District of the Kilkenny Union.

Births, Marriages, and Deaths.

BIRTHS.

GALTON.—On the 30th ult., at Woodside, Anerley-road, S.E., the wife of John H. Galton, M.D.Lond., of a daughter.

HARRISSON.—On the 22nd ult., at Gambier-terrace, Liverpool, the wife of James Harrisson, M.R.C.S., M.K.Q.C.P.I., of a son.

MILWARD.—On the 24th ult., at Edinburgh, the wife of W. Clement Milward, Surgeon, A.M.D., of a son.

NAISMITH.—On the 23rd ult., at Ayr, N.B., the wife of W. J. Naismith, M.D.Edin., of a daughter.

PHIPPS.—On the 3rd inst., at Clairville, Oxford-street, Manchester, the wife of G. Constantine Phipps, M.D., F.R.C.S.Eng., of a daughter.

STEVENSON.—On June 14th, at Malmesbury, Cape of Good Hope, the wife of Dr. Edward Stevenson, of a son.

WALDO.—On the 22nd ult., at Bradstowe Lodge, Pembroke-road, Clifton, the wife of Henry Waldo, M.D., of a son.

WHITE.—On the 31st ult., at Fletcher House, Tottenham, the wife of Octavius M. White, Surgeon, of a daughter.

MARRIAGES.

HOCKRIDGE—HUDSON.—On the 26th ult., at Crayford Parish Church, Thos. G. Hockridge, M.D., M.R.C.S., to Frances Jane, eldest daughter of H. Hudson, Esq., of The Limes, Crayford.

SHAW—LOMER.—On the 27th ult., at St. Mark's, Woolston, Surgeon Major John Alexander Shaw, A.M.D., of Chatham, to Jessie, second daughter of Alderman W. A. Lomer, J.P., of Woolston House, near Southampton.

STEWART—JACKSON.—On the 28th ult., at St. Catherine's Church, Wakefield, William Stewart, M.B., of Bacup, Lancashire, to Lucy Ellen, daughter of John Jackson, of Heathfield Lodge, near Wakefield.

WHITTLE—DE VITRÉ.—On the 28th ult., at St. Nicholas' Church, Brighton, Edward George Whittle, M.B.Lond., F.R.C.S.Engr., to Elizabeth (Lillie), eldest daughter of the late Major John Denis de Vitré, Bombay Fusiliers, and adopted daughter of the late Edward Denis de Vitré, Esq., M.D., of Lancaster.

DEATHS.

BURTON.—On the 1st inst., at Rich-terrace, Richmond-road, West Brompton, Thos. Beard Burton, M.R.C.S., aged 38.

FORSYTH.—On the 25th ult., William Forsyth, L.R.C.P.E., L.R.C.S.E., of St. Martin's-lane, Charing-cross, aged 69.

HATCHELL.—On the 30th June, at Villa d'Este, Lago di Como, Ebenezer John Hatchell, M.D., Staff Assistant-Surgeon, Half-pay, Army Medical Department, aged 46.

HAYMAN.—On the 26th ult., at Ramsgate, Philip Charles Hayman, Esq., M.R.C.S., formerly of Axminster, Devon.

TURNBULL.—On the 24th ult., at Neckersgat, Belgium, Alexander Turnbull, M.D.Edin., late of Russell- and Berkeley-squares, aged 88.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths

Notes, Short Comments, and Answers to Correspondents.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Local papers containing reports or news-paragraphs should be marked.

Letters, whether intended for publication or private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

Lectures, original articles, and reports should be written on one side only of the paper.

We cannot prescribe, or recommend practitioners.

All communications relating to the editorial business of the journal must be addressed "To the Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *to be addressed "To the Publisher."*

SANITARY STATE OF THE ISLE OF WIGHT, RYDE.

WE have been favoured with the following communication from Ryde:—

Meeting called by A. G. Davey on May 9th, 1881. Present: B. Barrow, Esq., Dr. Beaton, M.D., A. Woodward, Esq., E. Rich, Esq., J. M. Pletts, M.D., B. Pinniger, Esq., and A. G. Davey, M.D. Resolved unanimously that the following should be forwarded to the Mayor and Council of Ryde:—"We, the undersigned medical practitioners in the borough of Ryde, having this 9th day of May, 1881, carefully considered Dr. Ballard's report on the sanitary condition and administration of this town, are of opinion: (1) That the Mayor and corporation of Ryde should lose no time in placing proper ventilation in all the sewers. (2) That all obstructions to ventilation now existing should at once be removed, according to Dr. Ballard's suggestion. (3) that instructions should be given to the public through the local newspapers respecting the necessity of ventilating house drains and disconnecting all drains outside instead of inside the houses, as well as instructions respecting water-supply; and, furthermore, provided only the above suggestions are carried out, we, the undersigned, pledge ourselves to assist the medical officer of health in dealing systematically with infectious diseases, &c. Considering that Ryde can boast of an isolation hospital and disinfecting apparatus, also a public mortuary, as well as the disinfecting apparatus at the Royal Isle of Wight Infirmary, this borough ought to be one of the best governed ones in the kingdom. (4) Lastly, we venture to hope the appointment of medical officer of health to this borough will be filled without delay, if only for a limited period." (This was signed by all present except Mr. Barrow, who fully coincided with every point, but considered, as he was one of the Town Council, it would be better for him not to sign it.)

The following was the answer:—

"Town Clerk's Office, Ryde, Isle of Wight,
"May 16th, 1881.

"Dear Sir,—I am directed by the Ryde Town Council to acknowledge the receipt of your letter of the 9th inst., enclosing a letter to the council signed by several of the medical practitioners of the borough with reference to certain sanitary arrangements, and I am directed to state that the council have for some time past had the questions raised in the letter under consideration, and are still giving them their anxious consideration.

"I am, dear Sir, yours faithfully,
"E. HOPGOOD, Town Clerk.

"Alex. G. Davey, Esq., M.D., Belvedere-street, Ryde."

Since then another inspector of nuisances has been appointed, whose time is entirely devoted to that purpose, and who has worked well. Two men have been appointed for flushing the sewers and keeping man-holes clear. A water-cart has been provided, holding 300 gallons, having a valve underneath eight inches in diameter that allows the whole 300 gallons to pass into the sewer in thirty seconds. A medical officer of health has been advertised for, and the appointment is to be made for a limited period, with a view, if possible, of adopting Dr. Ballard's suggestion. In my opinion the town of Ryde was never more healthy or free from infectious complaints than it is at the present time.

ALEXANDER G. DAVEY, M.D., &c.,
Senior Physician to the Royal Isle of Wight Infirmary, Ryde, and Fellow of the Sanitary Institute of Great Britain.

Ryde, July 25th, 1881.

Mr. M'Innes.—The weight of the brain of the cow at the third year of life is inferior to that of man. The average weight of the adult human brain is 48 oz., that of the cow about 16 oz. The weight of the brain of a child three years old greatly exceeds that of a cow of the same age.

PROVIDENT DISPENSARIES.

WE are obliged to defer the consideration of letters on the question of Provident Dispensaries in consequence of the unprecedented pressure on our space.

A Constant Reader.—The statement is correct on one theory of colours, but this, with all other theories on colour, demands proof, which has not yet been afforded.

MESSRS. SCHIEFFELIN AND CO.'S EXHIBITS AT THE INTERNATIONAL MEDICAL AND SANITARY EXHIBITION.

To the Editor of THE LANCET.

SIR,—In your issue of the 30th inst. you speak of Schieffelin and Co.'s specialty being sugar-coated pills, and say "that their case is almost empty," owing to the loss of our exhibit shipped per *Britannic*. We would say that our case is now filled with a fresh exhibit received a few days since, and also call your attention to the fact that our specialty is not "sugar-coated pills." Our specialty is soluble-coated pills, our coating being an inert compound, which is tasteless, odourless, colourless, and transparent, dissolves almost instantly, and is not affected by age—in fact, our preparations are diametrically opposed to sugar-coated pills. Trusting you will give this communication a place in your columns, we are, Sir, respectfully yours,

W. H. SCHIEFFELIN & Co. (of New York, U.S.A.).

London, August 1st, 1881.

L.R.C.P. Lond. (Lincolnshire).—The Pharmaceutical Congress may probably take up the subject, therefore we think our correspondent's letter had better not be published.

Dr. Bourke.—There are several institutions of the kind indicated. They are for the most part situated in the provinces, and a list of them may be found in Howe's Classified Directory of Charities, published by Longmans and Co.

Mr. Arthur G. Klugh's request arrived too late.

SWALLOWING A PIN: SOLID DIET TREATMENT.

To the Editor of THE LANCET.

SIR,—I am induced to send you the following particulars of swallowing a pin, which I think worth recording, as a more remarkable instance of the success of the solid diet treatment than the marble swallowing, lately recorded.

On June 11th, 1881, at 10.30 A.M., I received a sensational message that a child aged two years had swallowed a pin. The old women were clamorous for castor oil with as little delay as possible, but I calmly desired them to leave the child alone, and feed it only on bread-and-butter and other dry diet till the pin came away. This desirable result occurred at 8.30 A.M. on June 14th, the pin, which was an inch and a half long, with a head the size of a small pea, being expelled, without pain or disturbance, head first, imbedded in a mass of fæces.

I am, Sir, faithfully yours,

BEAVEN RAKE, M.R.C.S. Eng. & L.S.A.

Fordingbridge, July 28th, 1881.

A Student (Guy's Hospital).—Our correspondent must be curiously unfortunate either in his teachers or his opportunities of studying vaccination when he can write "that the local inflammation [accompanying vaccination] often producing uncomfortable effects in the adult, is relatively much severer in the case of a child a few months old," the fact being just the contrary. His suggestion is of the same quality as his knowledge of fact, and is seemingly made without acquaintance with the law in relation to vaccination.

"PUBLIC CONVEYANCES."

To the Editor of THE LANCET.

SIR,—With reference to a paragraph in your journal of the 9th inst., on the subject of "omnibuses as distributors of diseases," I beg to inform you that a client of mine has within the last few months patented an improvement in the construction of omnibuses, which embodies the novelty of seating the passengers "back to back," secures absolute ventilation, a more easy access, and does away with the dreadful noises which now afflict inside passengers, thus alleviating, if not entirely removing, many of the disagreeables, not to say dangers, at present attending omnibus travelling.

I may add that an omnibus is now being constructed to carry out these improvements, and that it will shortly be submitted for the approval of the metropolitan public.—I am, Sir, yours faithfully,

HY. THOS. CHAMBERS,
Solicitor for the Patentee.

Moorgate-street, London, E.C., July 30th, 1881.

MEDICAL REGISTRATION.

To the Editor of THE LANCET.

SIR,—I ascertained the other day by the merest accident that my name did not appear on the Medical Register. Upon writing to the registrar I was informed that, as their circular to me had remained unanswered, my name, in accordance with some Act of Parliament, had been erased. I never received the circular mentioned, and, considering the number of letters that miscarry annually, it is a most shameful thing that any medical man, who has once paid for registration and never done anything to forfeit the right, should be treated in this arbitrary manner. Another letter received this morning informs me that "Pursuant to a resolution passed by the Executive Committee of the General Medical Council, my name will be restored on the payment of five shillings." Such conduct, I think, demands an apology from them, and not a money payment from me.

I am, Sir, yours very faithfully,

Park-place, Leeds, July 29th, 1881. PHILIP FOSTER.

Law.—The question is a legal one, but the charges should be paid.

Subscriber.—The *Boston Medical and Surgical Journal*, July 20th, 1881.

UNSOUND MEAT IN WHITEHAVEN.

To the Editor of THE LANCET.

SIR,—On the 28th instant, at the request of the inspector of nuisances in this town, I accompanied Mr. Robert Lumb, our medical officer of health, to examine some meat which he had seized as the carcase of an animal unfit for human food.

We found in the office of the inspector two hind and two fore quarters of beef, dressed in the ordinary way for the market. Of these one fore and one hind quarter, beyond being poor in quality, were of a natural consistence, and the flesh of a healthy red colour. Clearly we could not condemn them, but the other two quarters showed the cut surface of flesh to be of a dark, livid, purplish colour, and the cellular tissue which enveloped the muscles forming the walls of the abdomen was studded with numerous air vesicles of sizes varying from that of a pin's head to that of a pea. We next found that all the four quarters were of the right side, and could not have belonged to the same animal. On questioning the inspector on this point, he said that the butcher from whom he had seized it had declared that he had but one carcase in his shop, and he had accordingly brought all away. We declared the two quarters first inspected to be saleable, and proceeded to examine the remainder.

In the pelvis, near the pubis, we found the tissue covering the muscles to be in several places raised in bulges, some nearly as large as one half of a hen's egg; these, on being pressed, crepitated, and, on being cut into, gave out air bubbles and a quantity of dark fluid blood.

On the inner surface of the anterior part of the abdominal wall we found a space of the size of one's hand, from which all the tissues but the external layer of muscle had been cut away; this muscle on its cut surface was exuding dark fluid blood from numerous points.

Observing that the kidney had not been abstracted, we lifted it from its enveloping fat, and found it to be surrounded by a thin layer of slightly turbid serum. On incising the organ, its cortical structure was seen to be of an ex-sanguine appearance, of a pale cinnamon colour, and the medullary pyramids to be intensely congested, of the darkest possible chocolate colour.

In the spinal cord we found points of extravasation, with tortuous vessels gorged with blood; the grey matter was also darker than natural.

On again turning to the flesh, we found that it tore easily, its fibres were easily separable with the handle of the scalpel, and it was soft and dark throughout its texture. Litmus paper being applied, it failed to give the acid reaction of healthy meat, and a portion which I infused in warm water gave none of the appetising aroma of good beef-tea, but instead a faint sickly odour of commencing decomposition was exhaled.

We felt that we had established the fact that the animal had been the subject of recent acute disorder, that before it was killed "the life of all its blood was touched corruptibly," and the inspector accordingly took proceedings before the magistrates. I forward a copy of a local paper (*Northern Counties Gazette*) with report of evidence, whereby it will be seen that the majority of the bench, much to the disgust of the chairman, believed the word of the vets and others, that because the animal was reported to have had only milk fever, its flesh must be and was good for food. One of these witnesses declared that he had been heroic enough to make *experiments in corpore vili*, and had cooked and eaten some of this meat. This decided the majority, and a non-suit was accordingly ordered.

One must greatly regret this failure of justice. Our hygienic conditions here are none of the best. We are a not-too-clean town, on the shore level, at the bottom of a basin of surrounding hills, and our lower orders are sadly overpacked in their dwellings. With the converging upon us from the surrounding districts of bad meat which this recent decision of the justices is likely to bring, we may look for it that our Poor-law and infirmary medical officials will find much increase to their work, and that our death-rate will be notably heightened.

I am, Sir, your obedient servant,

T. F. I'ANSON, M.D.,
Consulting Surgeon to the Whitehaven and West Cumberland Infirmary.

Whitehaven, July 30th, 1881.

BOARDING-OUT OF PAUPER CHILDREN.

THE inspector appointed by the Leeds Board of Guardians to investigate the working of the boarding-out system adopted in the parish has issued his report, in which he expresses unqualified satisfaction at the results of the scheme. He concludes by stating that "the moral, social, and physical benefits accruing to the children, and eventually to the population generally, will be great and lasting."

Surgeon Blank and *A Thirty Years' Subscriber* have not enclosed their card.

COMMUNICATIONS, LETTERS, &c., have been received from—Mr. Oliver; Mr. Beal, London; Messrs. Bullen, Bampton; Dr. Sinclair, Dundee; Mr. Custance, London; Dr. Bourke, London; Dr. O'Brien, Liverpool; Dr. Dunlop, London; Dr. Mackay, Howick, Quebec; Dr. Buchanan, Glasgow; Mr. Abbott; Mr. Gay; Barroughs, Welcome, and Co., London; Mr. Pike, Loughborough; Mr. James Arthur, Wingate; Mr. J. C. Sargeant, London; Professor Longmore, Netley; Dr. Geo. Johnson, London; Mr. Beavan Rake, Fordingbridge; Dr. Alfred Carpenter, Croydon; Mr. H. M. Barker, Sandown; Mr. G. Jerrard, London; Mr. Medland, London; Mr. Newington; Mr. R. Paramore, London; Dr. Eastwood, Darlington; Mr. H. T. Chambers, London; Dr. I'Anson, Whitehaven; Mr. C. Visick, Malaga; Dr. Nedwill, Christchurch, N.Z.; Mr. Klugh, London; Mr. Walford, Ramsgate; Mr. Dobbin, London; Messrs. Mayer and Co., Mayence; Dr. Rayner, Hanwell; Mr. C. E. Jennings, London; Messrs. Longden and Co., Sheffield; Mr. Uhthoff, Brighton; Mr. Balmanno Squire; Dr. Bond, London; Messrs. Coxeter and Son, London; Mr. Barrow, Liverpool; Mr. R. R. Allen, Durban, South Africa; Mr. J. Aikman, Guernsey; Mr. Dinnen, Holyhead; Mr. C. Foster, Leeds; Mr. Ellis, London; Mr. Hayward, London; Mr. G. F. Naylor; Mr. B. F. Hartzhouse; Messrs. Hildesheimer and Faulkner, London; A. Green, London A Thirty Years' Subscriber; L.R.C.P. Lond.; Surgeon; Law; Ovum; A Student; The Head Master of the Ely Cathedral Grammar School; G. G. B.; Medicus, Birmingham; S. U. M.; &c., &c.

LETTERS, *each with enclosure*, are also acknowledged from—Dr. Dickson, Brixton; Mr. Renton, Shockley-bridge; Messrs. Schacht and Co., Clifton; Mr. Bennett, Burnley; Mr. Priest, Hertford; Mr. Stanley, North Shields; Mr. Horsfall, Wakefield; Mr. F. A. White, London; Mr. Woodhouse, Manchester; Dr. Gorton, Anerley-road; Mr. Willey, Birmingham; Mr. Jeffery, Epsom; Messrs. Squire and Co., London; Mr. Urquhart, Edinburgh; Mr. Lloyd, Bristol; Dr. Macdonald Cupar, Fife; Mr. Lloyd, Sittingbourne; Mrs. Kavanagh, Coventry; Mr. Stephenson, Cardiff; Mr. Davies, Maesteg; Mr. Beamor, Newton-le-Willows; Mr. Collacott, Tavistock; Mr. Lamper, Leeds; Mr. Goddard, Leicester; Mr. Callard, London; Mr. Fry, Swindon; Dr. Buchanan, Glasgow; Mr. Van Praagh, London; Mr. Lawton, York; Mr. Allen, Bristol; Mr. Buckby; Messrs. Robson and Son, London Mr. Hamilton, Brighton; Mr. Evans, Goring; Dr. Water, Cape of Good Hope; Mr. Alodd, Heckmondwike; Messrs. Smith and Son, Birmingham; Dr. Hewson, Stafford; Dr. Woodruff, Edinburgh; Mr. Kennard, Cranbrook; Mr. Thornton, Exeter; Mr. Beamish, Warwick; Mr. Ellis, Brighton; Medicus, Euston-road; A. J.; M. E., Twickenham; P. S., Leicester; J. P., Tavistock; W. J. B., Harland; T. C., Crambow; A. B. C, Paddington; A. B., Lutterworth; L. G.; M.R.C.P., West Ham; G. A. F., Deptford; L. M., Manchester; Delta, Aberdeen; Alpha, Sheffield; A.; H. O.; A. E. E., Folkestone; L. H., Manchester; Principal, Seaford; M.D., Camberwell; Medicus, Portsmouth; Alpha, South Kensington; T. S. H.; Alpha, Manchester; &c., &c.

Coffee Public-house News, Morning Herald (Baltimore), Sydney Evening News, Northern Counties Gazette, Liverpool Mail, Brighton Gazette, Daily Review, Evening News, The Zoophilist, &c., have been received.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET OFFICE, August 4th, 1881.

Date.	Barometer reduced to Sea Level, and 32° F.	Direction of Wind.	Dry Bulb	Wet Bulb	Solar Radia in Vacuo	Max. Temp Shade	Min. Temp	Rain fall.	Remarks at 8.30 A.M.
July 29	29·97	W.	65	62	106	74	55	..	Cloudy
,, 30	29·90	S.W.	64	60	79	68	57	..	Overcast
,, 31	29·54	S.	61	59	68	68	56	..	Raining
Aug. 1	29·87	W.	62	56	105	75	51	0·39	Hazy
,, 2	30·14	E.	60	55	95	71	55	0·19	Overcast
,, 3	30·25	W.	61	58	98	71	52	..	Raining
,, 4	30·36	W.	64	61	112	81	57	..	Overcast

Medical Diary for the ensuing Week.

Monday, Aug. 8.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS. — Operations, 10½ A.M. each day, and at the same hour.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M. each day, and at the same hour.
METROPOLITAN FREE HOSPITAL.—Operations, 2 P.M.
ROYAL ORTHOPÆDIC HOSPITAL.—Operations, 2 P.M.
ST. MARK'S HOSPITAL.—Operations, 2 P.M.; on Tuesday, 9 A.M.
UNIVERSITY COLLEGE HOSPITAL.—Ophthalmic Department.—2 P.M., and on Tuesday, Thursday, and Friday, at the same hour.

Tuesday, Aug. 9.

GUY'S HOSPITAL.—Operations, 1½ P.M., and on Friday at the same hour.
WESTMINSTER HOSPITAL.—Operations, 2 P.M.
WEST LONDON HOSPITAL.—Operations, 3 P.M.

Wednesday, Aug. 10.

NATIONAL ORTHOPÆDIC HOSPITAL.—Operations, 10 A.M.
MIDDLESEX HOSPITAL.—Operations, 1 P.M.
ST. BARTHOLOMEW'S HOSPITAL. — Operations, 1½ P.M., and on Saturday at the same hour.
ST. THOMAS'S HOSPITAL. — Operations, 1½ P.M., and on Saturday at the same hour.
ST. MARY'S HOSPITAL.—Operations, 1½ P.M.
KING'S COLLEGE HOSPITAL. — Operations, 2 P.M., and on Saturday at 1 P.M.
LONDON HOSPITAL.—Operations, 2 P.M., and on Thursday and Saturday at the same hour.
GREAT NORTHERN HOSPITAL.—Operations, 2 P.M.
UNIVERSITY COLLEGE HOSPITAL. — Operations, 2 P.M., and on Saturday at the same hour.—Skin Department.—1.45 P.M., and on Saturday at 9.15 A.M.
SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN. — Operations, 2½ P.M.

Thursday, Aug. 11.

ST. GEORGE'S HOSPITAL.—Operations, 1 P.M.
ST. BARTHOLOMEW'S HOSPITAL.—1½ P.M. Surgical Consultations.
CHARING-CROSS HOSPITAL.—Operations, 2 P.M.
CENTRAL LONDON OPHTHALMIC HOSPITAL. — Operations, 2 P.M., and on Friday at the same hour.
HOSPITAL FOR WOMEN, SOHO-SQUARE.—Operations, 2 P.M.
NORTH-WEST LONDON HOSPITAL.—Operations, 2½ P.M.

Friday, Aug. 12.

ST. GEORGE'S HOSPITAL.—Ophthalmic Operations, 1½ P.M.
ST. THOMAS'S HOSPITAL.—Ophthalmic Operations, 2 P.M.
ROYAL SOUTH LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M.

Saturday, Aug. 13.

ROYAL FREE HOSPITAL.—Operations, 2 P.M.

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